Cost and Management

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Editorial Comment . . .

Man and Time

THE fundamental difference between a man-made law or an invention and a Law of Nature is of course that the one is subject to change and the other is eternal. Man may form a theory to explain a universal rule but he cannot influence the working of that law. Newton dropped an apple and found that there was a constant relationship between the speed and the time an object was falling. Two hundred years later the force of gravitation has not been changed a fraction by man. Similarly, we know that sound travels so many feet per second; we may shout as loud as possible, but the sound of our voices only travels further, not faster.

One of the more recent theoretical discoveries is Albert Einstein's Quantum theory which established time as a fourth dimension of space. Actually, the theory is understood by only a few select men who have the mental capacity and training for such complicated relationships. The results of the discovery may be far-reaching in science, but the reaction of today's fast-moving world is that there is still only a 24-hour day. We may increase that to 30 shorter hours, but the time that the earth takes to revolve or the time from conception to birth is the same as it was 10,000 years ago.

Thus man is faced with a dilemma. Through the advancement of science, travel is now more extensive and faster, communication is greater, but the time that man has to comprehend these new interests is still the same. Recently there have been several attempts to create the ideal image of the corporate man. The architects have been faced with a formidable problem. On the one hand they are told that the further a man advances in the carpeted halls the wider his outlook and interests should become. At the same time, technology is advancing at an unprecedented rate and things are happening much faster. The problems created by this fever of activity demand more of the time today that should be spent planning five years hence.

In order for a man to broaden his outlook he must cultivate his sense of feeling in the world of art, religion, literature, and history. To do this he is again using today's hours to learn about past experience. Undoubtedly this knowledge will serve him well in his future work, but when will he learn about what is happening now? Will

it be in the future? Will man only comprehend the present in which he lives by reading a historical account of it tomorrow?

In the industrial area the problem of time and space and advancement is becoming more acute. At times, it seems that man has created a scientific monster that outpaces him as an individual. Technology and business have become so scientific that more specialists are required daily. If a man becomes a specialist, it occupies a lifetime, so that he has scant opportunity to broaden his outlook for the senior management positions. The specialist finds himself on a treadmill that is difficult to get off.

How then will man with all his ingenuity create an international well-being that is human, wise and cultivated, strong and dedicated to the cause of industrial progress? There is a strong indication that this type of man is already in the embryo stage. When the problem is divided into its essentials of time available for a man to live and learn, and then the different aspects of the demands that are required of the specialist and of the top-ranking executive are considered, one must conclude that we cannot have both in the same man in one lifetime. We are precariously balanced on a point of time looking both forward and backward, yet still involved in the business of living in the present. Obviously we must make a choice about the area in which to concentrate our efforts of learning. Thus it would seem reasonable to assume that the corporate man will in a sense also be a specialist. He will specialize in directing and co-ordinating the efforts of other specialists. His knowledge will be broader by a matter of degree, but he will have to be essentially strong in his knowledge of man and what motivates him.

The members of this Society should be vitally interested in the many changing relationships in time and distance, and the acceleration in the pace of working and living. In our personal lives we should be concerned and be helping to shape the new philosophies that are emerging. As businessmen, we are involved as members of the changing industrial scene. The choice of the theme "The Challenge of Change" for the 1960 National SICA Conference, is a recognition that speed and change are creating new problems in the business world. It is a timely topic and should evoke much interest, many questions, and we hope some constructive guidance.

As Sir Winston Churchill has said "We live in an age where the mood decides the fortunes rather than the fortunes decide the mood." However, he is a living example that man has tremendous capabilities to grasp the fortunes of the swiftly moving moment and set the stage for the years ahead.

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ACCOUNTING FOR HARDWOOD CONVERSION COSTS*

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This paper outlines a practical standard cost accounting approach to the many problems inherent to hardwood conversion. The method offers speedy reporting for efficient control combined with low clerical costs.

GENERAL DESCRIPTION OF THE FACTORY

THE factory under discussion is located near a large supply of birch and poplar, the two major types of hardwood consumed. Because we are near this source of raw material and maintain our own logging operations, we are in a position to compete successfully for business. The plant employs approximately 200 men and women per shift, producing a variety of hardwood products to order.

The mill has been divided into two producing departments.

The first, Rough Mill, contains the necessary machines and equipment to cut-off, rough dress, rip, and glue lumber to required rough dimensions. This department, with the exception of an electronic gluer, consists mainly of a break-out line. The break-out line is a series of saws, planers, and jointers connected by belts where a rough board beginning at one end comes out rough-dressed and ripped to width at the other. It is a production line, allowing the department supervisor to mix orders, thereby obtaining a variety of cutting lengths which in turn leads to increased lumber utilization and reduction of waste.

The second producing department, Finish Mill, contains machinery necessary to finish material to the quality desired. Some of this equipment consists of stickers of various sizes, tennoners, gang chain, and single chain mortisers, shapers, finishing saws, etc. All finishing operations except inspection and packing are performed in this department.

Several departments have been established over the years to perform necessary services for the producing departments. A short résumé containing some details of the functions of each service department follows.

The machine shop is responsible for maintenance of buildings, machinery, and equipment. It operates on a work order system whereby maintenance costs are charged to all departments requiring their services. A stock room is maintained

* Condensation of a thesis submitted for R.I.A. qualification.

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separate from production supplies, where a stock clerk keeps inventory records together with records of materials dispensed to various work orders. In an attempt to reduce expenses, this department contracts for outside work. Any revenue derived from this activity is used to reduce the department's operating costs.

As is the case in many woodworking plants, we operate our own boilers and generating equipment to provide light, heat, and power. Fuel used consists mainly of rippings, ends, shavings, and sawdust accumulating from the manufacturing process. Steam produced by the boilers is also used by the kilns in our drying process. The department responsible for this service is called Power.

Security and property is responsible for plant security, snow removal, washroom cleanliness, etc.

Our inspect, pack, and ship department assumes responsibility for the quality of material produced, packs the material according to specifications, and arranges transportation to customers.

Another very important function of our plant is the waste handling department. This section is responsible for the collection and accumulation of waste for use as fuel. This is very important during the summer months when our supply of waste exceeds the demand. Waste at this time of year is stored for use during the winter, or if not required, is sold for fuel.

In addition to those mentioned above, a separate record of costs is maintained for the yard and kiln departments. It should be noted costs incurred in these sections are not included in our departmental overhead rates, but instead are considered a part of material costs. Distribution to lumber species is based on foot board measure handled.

THE OFFICE ORGANIZATION

Other large interests, such as retail outlets and logging operations, made it desirable from an economy point of view to centralize some functions of our factory in head office. They are located on the second floor of our factory office where company functions such as accounting, traffic, and purchasing are carried on for all divisions.

There are four main divisions of responsibility, each division reporting directly to the factory manager. The office manager has control of, and is responsible for, general and cost accounting, invoicing, payroll, and general office routine. Production planning and production engineering are separate departments, reporting directly to the factory manager. Of necessity, however, these departments work very closely with the cost department as all waste figures, material prices, labor prices and overhead rates for comparison are supplied by the cost accountant.

Our plant has a small industrial engineering section. Material and labor standards are established by time and motion study supervised by our industrial engineer. Standards so obtained are subject to the scrutiny of both the department supervisor concerned and the plant manager. This procedure is considered necessary so that department supervisors will feel the standards are realistic and possible of attainment and, therefore, will take a greater interest in seeing that standards are met. Responsibility for increased efficiency of operation and the use of better methods has been placed with the supervisors and the industrial engineer. Our supervisors are individuals with a great deal of experience in the woodworking in-

dustry—experience which we attempt to use to advantage.

In order to handle properly the large amount of detail necessary in accounts payable and labor distributions of all divisions of the company, management has decided to use electronic equipment in the very near future. It is expected this installation will reduce clerical costs and increase accuracy.

ESTIMATING PROCEDURE

Figure 1 is a sample estimate sheet for hardwood products as used by our firm. This estimate has been designed to show the standard costs of material and labor required for each product, and also allows for the application of overhead by department as a percentage of direct labor hours.

In the calculation of raw material (lumber) to be consumed in the manufacture of a product, neat board measure is adjusted for the expected utilization of each specie, size, and grade of material. Gross footage, thus obtained, is extended by the standard price, which includes yard-handling and kiln-drying costs.

If the product being estimated requires other direct materials, they are included as a direct cost. For example, if the article is to be manufactured from glued-up stock, a standard charge per 1000 square feet has been established for estimating purposes. Most other materials can be calculated and placed in the estimate depending upon the customers' requirements. All prices used in estimates are standards which have been established for this purpose and for measuring efficiency.

Each estimator has available a set of labor standards, showing various times required to process products or components through each operation. If the product is entirely different from any standards available, the industrial engineer and department supervisors affected decide upon the operation time.

Standard times obtained by this method are extended by standard labor rates to provide the expected labor cost per product.

As the flexible budget is completed each year, overhead rates per direct labor hour are computed at various capacities. Management then decides upon percentages to be used for estimating overhead during the coming year. For the calculation of selling prices, the rate obtained at normal capacity is always used. Management takes a long range view for overhead absorption, feeling that any difference between actual overhead absorbed and overhead estimated is a variance caused from activity less than normal capacity. This method also avoids the peaks and valleys which occur at various seasons throughout a complete cycle, at which times it is difficult to refrain from increasing overhead percentages to recover unabsorbed burden. The rate per direct labor hour at normal capacity is given to each estimator for inclusion in all estimates.

Administration, office and selling expense percentages are also obtained from the budget at normal capacity. They are passed to and used by each estimator as a percentage of factory cost. The total cost obtained by adding administration, office and selling expense to the manufacturing cost is increased by a profit percentage to obtain a proposed selling price.

In some instances, depending upon the difficulty anticipated in the production of a product, a percentage is added to the manufacturing cost estimated to cover work-in-process waste.

Upon receipt of an order, a job cost sheet (Figure 2) is completed from the

COST ESTIMATE

FIGURE 1

Product..... Part..... No.....
Specie..... Grade..... Moisture.....
Quantity:.....

Item No.	Fin. Size L	W	T	Rough Size L	W	T	Net F.B.M.	Util. %	Gross F.B.M.	Std. Price	Lumber Value	Estimate per ....
1												
2												
3												
4												
5												
6												
7												
8												
											Total Lumber Value	

OTHER RAW MATERIAL

Description	Quantity	Unit	Cost
			Total Other Material

LABOUR

Operation	Dept. No.	Item 1	2	3	4	5	6	7	8	Total Hours	Std. Rate	Labour Cost

Remarks		
	Total Labour Cost	
	Overhead—Rough mill— Hrs. @	
	Overhead—Fin. mill— Hrs. @	
	Total	
	Spoilage %	
	Factory Cost	
	Commercial Burden %	
	Total Cost	
	Profit %	
	Freight	
	Proposed Selling Price	

JOB ORDER COST SHEET

FIGURE 2

Description..... Order No.....
Factory Cost..... Quantity.....
Specie.....

Date	Cutting Sheet No.	Std. Unit Price	Standard		Quantity Variance	Actual	
			F.B.M.	Value		F.B.M.	Value
		Totals....					

OTHER RAW MATERIAL

Description	Dept. No.	Std. Unit Price	Standard		Quantity Variance	Actual	
			Quantity	Value		Quantity	Value
		Totals....					

LABOUR

Operation		Dept. No.	Standard			Variance			Actual		
No.	Description		Hours	Rate	Value	Rate	Eff.	Total	Hours	Rate	Value
		Totals....									

OVERHEAD

	Period Number	Dept. No.	Standard D.L. Hours	Overhead Rate Per D.L. Hr.	Value
				Total Applied.....	

estimate, showing all standard costs. Actual expenses are charged to each job number during the manufacturing process, and comparisons made with estimated costs. Variances of material, labor, and other report data are also obtained from the job cost sheets.

INVENTORY CONTROL—LUMBER

Most lumber species required in our manufacturing process are purchased by the cut, or at least they contain a mixture of grades and sizes. It was, therefore, necessary to develop a practical and relatively inexpensive way to receive, grade, and sort this material so that it could be stored ready for factory use. An effective approach towards obtaining this goal was made with the purchase of an automatic sorter, which enables us to sort and pile lumber efficiently by specie, thickness, and grade.

Upon receipt, lumber is transferred from cars to a conveyor belt where it is graded and tallied as it passes employees stationed at various positions. It continues to move along the conveyor to the sorter crew, where it is placed manually in various sorter grooves depending upon specie, thickness and grade. After sorting, the lumber is piled in standard-sized lifts for yard storage. A tag showing grade, type of lumber, and board footage is placed on the end of each lift. The amount of lumber so marked is compared with tallies, and adjustments made to tags if required.

A perpetual inventory record of lumber is maintained showing quantities only. This is possible since we operate a standard cost system, transferring all lumber to work in process at standard values, and recording variances between actual and standard cost at time of purchase. This procedure represents a considerable saving in clerical help which would otherwise be required to maintain inventory records.

We maintain balances for both air-dried and kiln-dried material. Separation of total inventory into these two categories is necessary because each has a different standard value. The value difference arises from our policy of including yard costs and kiln-drying costs as part of the value of lumber. The two categories are also of assistance to production planning, as the kiln-dried balance indicates the amount of lumber ready for factory use. Each inventory card—one is written for each specie, thickness, and grade—contains two standard values. One value is for air-dried and the other kiln-dried. This method makes inventory valuation a routine matter which can be completed by any clerk.

Wherever and whenever possible, a physical inventory check of all lumber is continually in progress.

Inventory differences are totalled each period and form the basis of a report to management. Each specie must be checked at least twice each year. Therefore any materials not tallied during a six-month period are counted and inventory cards adjusted at that time.

INVENTORY CONTROL—OTHER MATERIALS

Raw material, other than lumber, and factory supplies are kept in a storeroom separate from machine shop supplies and lumber. A separate set of records is maintained to record the inventory of each class of material.

Quantities of direct materials described above are requisitioned from the store-

room. Each requisition is completed by a producing department foreman to show the department order number and description. After being used to reduce inventory balances, which are maintained in quantity only, all requisitions are passed to the cost department for further processing. Cards have space for standard prices, minimum and maximum quantities, and a description.

Factory supplies are requisitioned from the storeroom. Each requisition is completed by a department supervisor or his representative, and material is ordered by department. Inventory cards are kept by the "average cost method", with prices obtained from vendors' invoices which are routed to the stock clerk. Supplies on hand in each department at the end of a period are counted and considered a part of the supplies inventory.

REPORTING AND CONTROL OF MATERIAL COSTS—LUMBER

Lumber is, of course, the major item of cost in the conversion of hardwoods. Because it is the largest single cost factor a great deal of attention is directed towards its control and use. Before details concerning lumber cost are outlined, it is interesting to note that material-handling and kiln-drying costs are not treated as a manufacturing expense, but instead increase the value of lumber purchased. This is done because the cost of both departments is not related to the volume processed through the plant each period, but to the amount of lumber purchased, in the case of yard handling, and to the amount of lumber dried in the kiln department. Lumber is sometimes purchased as much as a year in advance to assure a proper supply when required. It is therefore felt this treatment of receiving and drying expense is the most logical method of distributing these costs.

After quantities have been posted to perpetual inventory records, the tally card showing lumber receipts is forwarded to an accounts payable clerk. Tallies and order copies are attached to invoices, which have been checked for quantity, price, terms, etc., and are passed to the cost department. In this department, all invoices are extended at standard costs by specie, size and grade. The standard used for this purpose is the same as that used for estimating and inventory valuation except it does not include yard-handling and kiln-drying cost standards. The purchase price variance obtained is recorded on columnar sheets by specie. A total of all variances by specie forms the basis for a weekly report to the works manager. Accounting makes the following entry in journals at time of posting: debit lumber stores at standard, credit accounts payable at actual, and debit or credit purchase price variance depending upon whether it is favorable or unfavorable.

Yard-handling expenses form a part of the cost of lumber. At the end of each period a comparison is made between the actual and expected cost, using footage received as the basis of the standard calculation. Kiln-drying costs are compared at the same time. However, this department uses as a basis for distribution the footage dried instead of the amount received. The differences between actual and budget for these departments are included in the report on manufacturing expenses.

The purchase price variance account is closed to profit and loss. It is handled in this manner since it is very difficult to obtain the actual value of material used because of many fluctuations in actual prices paid. Strict supervision reduces this variance to a minimum, with the result that it is not felt necessary to alter the value of raw material inventories.

The manufacturing process begins in our Rough Mill Department. Lumber is transferred to the factory from dry storage, quantities required being obtained from a copy of the cutting sheet supplied by the Rough Mill Supervisor.

The dry storage foreman supplies the standard quantity of lumber shown by the cutting bill, and credits any material returned. By way of explanation, a cutting sheet is required to enable breakout to utilize material to the best advantage by mixing orders to obtain various cutting lengths, thereby reducing the waste factor. Because it contains material standards for each order or quantity to be cut, it becomes a very useful document to the cost department.

At the end of each shift, the completed cutting sheet is forwarded to the cost department. The allocation to orders of actual lumber cut is completed by using the net feet per order extended by estimated utilization as a base. The extension of net feet by estimated utilization provides the standard allowed in total and by order. Total lumber cut is then divided by total allowed, producing a factor which is used to pro-rate actual lumber used to orders. Sample figures are provided on the cutting sheet (Figure 3) to further clarify the above computations.

We have now obtained the actual quantity of lumber used by order to compare with the standard quantity allowed. This enables the cost department to compute a material quantity variance, and to show this variance by order as required. A comparison of actual and standard materials used by order is supplied the rough mill supervisor as each order is completed by breakout. Only completed orders are shown in this report because the standard allowed covers an order. If an order could not be completed during a shift, which is seldom the case, it is the next item cut when operations start again. A total material quantity variance figure is reported to the manager weekly, and this figure is also used to write a journal entry, charging or crediting the account "Material Quantity Variance." Debits to work in process at standard quantity times standard price, and credits to lumber stores at actual quantity times standard price also form a part of this journal entry. The standard price used includes standards for yard-handling and kiln-drying cost. Work in process has now been charged with lumber at standard, and stores credited with actual lumber consumed.

REPORTING AND CONTROL OF MATERIAL COST—OTHER RAW MATERIALS

At time of purchase, a price variance for other raw materials is obtained by pricing invoices received at standard cost. Invoices, showing actual cost, standard cost, and the difference between the two are passed to accounting where three accounts would be posted. Actual amounts are credited to accounts payable, standard amounts are debited to the account "Other Raw Materials", and an entry is made to "Other Raw Materials Purchase Price Variance." This variance account is closed to profit and loss in the same manner as lumber.

Other raw materials consist of glue, plywood, masonite, packing materials, nails, screws, etc., and are charged to work in process at standard. Standards used are obtained from estimates written for each order, and have been used in the computation of selling prices. This material is divided into two classes. One type is requisitioned by order, the other in bulk form.

The first type of material, which is requistioned by order, consists of all the above

CUTTING SHEET

FIGURE 3

Cutting Sheet No:.....

Date..... Thickness..... Specie.....

PREDETERMINED							ACTUAL			
Order No.	Item	Lgth.	Net Feet	Utilization	Gross FBM	Grade	Act. Gross (see below)	Variance Fav.	Variance Unfav.	Actual Utility
7200	1	33″	500							
	2	31″	300							
	3	28″	600							
				63%	6349	#1 Com.	6600		251	60.62
7300	1	25″	400							
	2	18″	700							
	3	10″	1500							
			4000		6349					

LUMBER CUT		ALLOCATION TO ORDERS				
Thickness, Grade and Specie	FBM	Order No.	Net Feet	Utilization	Allowed	Actual
4/4 #1 Com. Birch	6600	7200 7300	1400 2600	63% 63%	2222 4127	2310 4290
Total...	6600					6600

mentioned articles except glue plus any other direct material not mentioned which can be measured by order. Requisitions covering these materials are priced at standard cost and posted to the proper job cost order sheets (Figure 2). A comparison of estimated and actual cost at standard provides a quantity variance which is accumulated in the cost department and used for management reports and entries to the books of account.

Glue is the major material coming under the second classification. This material, because of its nature, cannot be requisitioned by order. However, it is a direct material, forming part of a finished product, and is treated as such. Glue is requisitioned from stores as required. A daily report is obtained from the gluer operator showing orders processed and glue used. The standard value of glue actually consumed is obtained by pro-rating the cost over orders produced using board footage as the basis for distribution.

A journal entry is written each period from costs shown for each order. The debit at standard is to "Work in Process", the credit to "Other Raw Materials", and a debit or credit to "Quantity Variance—Other Raw Materials."

THE PAYROLL SYSTEM

For increased speed and efficiency combined with lowest cost for the number of employees required, we use a "One-write" system for payroll. A cheque, register, and individual earnings record is written at the same time, the last two being carbon copies of the first. Ths method not only produces each payroll efficiently, it facilitates balancing unemployment insurance and income tax when required.

Basic payroll records used in our plant are the same as those used by many other factories, consisting of a clock card and a work ticket. Each employee is required to punch his clock card upon entering and leaving the building. Work tickets are used by each employee to record elapsed times by department, order number, and operation. Punch clocks are located strategically throughout the plant so that times can be recorded accurately by order.

After each shift, clock cards and work tickets are collected. Payroll reconciles times shown on each card by employee, and calculates total elapsed times in the space provided on each work ticket. Hourly rates of each employee are shown on work tickets, which are then passed to the cost department for further processing. All employees are paid by the hour.

Payroll retains all clock cards, using them to compute employees' earnings. A summary card is maintained for each man from which his bi-weekly pay is prepared. The summary card contains columns for computing overtime, night shift premium, etc., as well as all deductions.

Gross payments made every two weeks are charged to a "Payroll" account. It is not necessary to accrue any wages as each fiscal period contains four weeks. Distribution of payroll is completed by the cost department, using work tickets to make the distribution to departments, orders, and indirect labor, etc.

LABOR COST CONTROL

Direct labor costs, taken by themselves, are not a large cost factor if compared with material. However, they do form a large part of total cost, and when overhead is distributed on the basis of direct labor hours, it becomes that much more important. Direct labor costs are also one of the items which have been increasing

steadily over the past few years. This increase in cost cannot always be recovered by increased selling prices, but must be offset by increased efficiency of the labor force. We, therefore, take every precaution to establish proper recording of labor completed, realizing that accuracy of reporting is basic to the requirements of a cost system which compares actual with expected efficiency.

When received, each ticket shows total elapsed time by employee along with the employee's rate of pay. It is now necessary to compute elapsed times by order, by operation, balancing each ticket with daily elapsed times shown at the top of each card. Each elapsed time by order, by operation, is next extended by the hourly rate to provide actual costs.

Work tickets also show the cost of indirect labor including overtime premium and night shift premium. This type of cost is posted daily in the job cost book by department only. Overtime premium is almost always considered as part of our overhead expenses. At the end of each period a payroll distribution is written from the indirect labor sheets maintained, charging either producing or service departments and crediting payroll. This expense is budgeted along with overhead items.

Once all labor tickets have been extended and balanced, it is a simple matter to recapitulate direct labor hours and dollars by order, by operation, and by department. They are then recorded on a job cost sheet (Figure 2), a sheet being written for each order and allowing space for actual labor by operation by department. Job cost sheets already contain standard direct labor hours and dollars by operation which can quite readily be compared with actual performance. Columns are also provided for the accumulation of rate and efficiency variances which are reported upon completion of an order by a department. Orders or job lots have been arranged so that completion through any department takes something less than one day. This report is, therefore, quite prompt and allows supervisors to control their labor operations.

At the end of each period, direct labor allowed is computed in total for a journal entry to the books of account. Total direct labor actual is credited to the account "Payroll." Total direct labor allowed is debited to "Work in Process." The difference is either debited or credited to the accounts "Labor Rate Variance" or "Labor Efficiency Variance" depending upon whether or not it is favorable or unfavorable.

FLEXIBLE BUDGETS

A standard cost system, such as the one used, lends itself to the formation of a flexible budget, the type described herein. The budget is used to: plan sales and expenditures, thereby forecasting an estimated profit; to co-ordinate our sales program and production facilities; and to control expenses by a comparison of actual and estimated, so that corrections can be made as the year progresses.

Our fiscal year ends December 31st. By November 30th of each year, our sales manager obtains estimates of expected sales for the coming year. This sales forecast is obtained from each salesman, and is his best estimate of sales by products which he expects to supply in his territory. This information is assessed by the sales manager and adjusted for any factors which he considers may affect sales figures submitted. A final summary is compiled, and the sales budget by product is submitted to the comptroller for inclusion in the master budget and to be used by others in the formation of their budgets.

From the sales budget submitted, our factory manager writes a production budget for the year and for each period, taking into account any fluctuations expected in finished goods inventories. At this time any decisions regarding changes in production facilities are made and planned accordingly. This budget is also returned to the comptroller, who co-ordinates the writing of all budgets.

A manufacturing budget is completed next. Material and labor costs for production expected are obtained by extending estimated production figures by standard cost where possible. If new product lines are expected, temporary standards of material and labor are used. A budget of material and labor content is completed for the year and for each period.

Overhead expenses form a part of the manufacturing budget. A normal capacity figure by department in terms of direct labor hours has been established by management, which is called 100%. This percentage makes allowances for inefficiencies of operation found to be prevalent in our industry. A flexible budget covering manufacturing expenses is prepared at 5% intervals above and below the normal of 100%. The range, extending from 75% to 125%, has been found sufficient for our requirements.

All overhead accounts are divided into fixed and variable elements. If an account falls under the semi-variable classification, a study is made of expenses in this account during past years to obtain the amount of variability. If a pattern does not emerge, management makes an arbitrary decision. Fixed expenses at normal capacity are then listed in a departmental budget allowance schedule, showing the fixed expense in dollars. A variable rate is also listed by account as an amount per direct labor hour. It is now possible to prepare a departmental flexible budget at the various rates of activity mentioned above.

Service department budgets are prepared separately, but incorporated in the budgets of producing departments in total. Fixed charges are shown directly to each department, and the variable element is based on direct labor hours anticipated for each producing department.

This budget is used to provide overhead rates by department for estimating and costing purposes. The rates used are the amounts obtained by dividing expenses by direct labor hours for each department under the normal capacity column.

Control of manufacturing expense is obtained by comparing actual expenses each period with budgeted expenses at the volume attained. This difference is shown as two variances, controllable and volume.

The controllable variance is obtained by subtracting from actual manufacturing expenses the budget allowance based on standard hours. This budget allowance is obtained by extending the number of standard hours which each order should have taken for work completed times the variable overhead rate obtained from budget. Fixed expenses are added to this amount. If there is an unfavorable controllable variance, it indicates the department supervisor spent more than he was allowed for volume attained.

The volume variance is obtained by subtracting from the budget allowance based on standard hours the amount found at standard hours times standard overhead rate. An unfavorable volume variance indicates the amount by which volume attained is under capacity.

When actual manufacturing expenses are incurred, the expense account affected

is charged. Work in process is debited with expenses at standard when the manufacturing process begins, the corresponding credit is to manufacturing expense applied. The applied account is closed to manufacturing expense control. The entry to work in process is calculated from the job cost sheets which show standard hours required for each operation. The entry is made to books of account each period by the cost accountant.

REPORTING OF OVERHEAD EXPENSES

Control of overhead expenses is accomplished by use of a flexible budget, which has been explained. The purpose of this section is to deal with the compilation of actual overhead between production and service departments, and to show the basis of distribution for service department expense to production departments.

There are two producing departments, rough mill and finish mill. Some overhead expenses, for example, factory supplies, indirect labor, small tools and others may be charged to producing department accounts directly. The chart of accounts allows a proper distribution for this type of expense.

Some overhead expenditures, because of their end use, are charged to general factory accounts. A distribution to producing departments is made at the end of each period.

In addition, there are several service departments which have been established to fix responsibility and enable management to exercise control over the expenditures of each one.

The machine shop is responsible for all maintenance of equipment and buildings. A separate stock room is maintained to control the raw materials with a storekeeper to dispense material by requisition. Costs to other departments, both producing and service are charged from a repair order. All departments have blanket order numbers which are used to compile ordinary maintenance costs. If a large repair job is required or if work of a capital nature has to be done, a special order number is issued by the maintenance engineer. So that machine skills can be kept when production may not warrant the expenditure, this department performs machining work for other firms in the district. All revenue from this endeavour is credited to machine shop expense. Actual expenses and revenue are entered through three accounts in the general ledger. The accounts are material, labor, and machine shop sales.

Another service department which requires further explanation is listed in the chart of accounts as "Power Department." Two accounts are operated—purchases and labor. It is the responsibility of this section to provide light, heat, and power for the entire plant. They also provide steam for heating the kilns, which is metered and charged at the end of each period to the kiln department.

Unfortunately it is very difficult to measure the amount of fuel consumed due to the fact we feed the furnaces mostly by continuous belt and exhausts from all machines. We attempt to solve this problem by estimating the weight of shavings required to produce a pound of steam. From the steam produced each period, which is metered, we are able to approximate the quantity of fuel consumed. A price is then established, using a value between what could have been obtained from selling the shavings and the value of coal which would be required to produce an equivalent number of B.T.U.'s. This value is charged to the power department and credited to waste handling. No attempt is made to reduce the cost of material consumed. The

MONTHLY VARIANCE REPORT

FIGURE 4

Type of Material	Actual Purchases	Standard Value	Pur. Price Variance
Lumber			
Other Raw Material			
Total...			

LABOUR

Deaprtment	Actual Hours	Act. Hours @ Act. Cost	Act. Hours @ Std. Cost	Rate Variance
Rough Mill				
Finish Mill				
Total...				

OVERHEAD

Accounts		Actual Expense	Budget Allow.	Std. Expense	Variance		
No.	Name				Total	Controllable	Volume
	Total...						

reduction of cost is passed along by a reduction of overhead applied to producing departments.

Overhead is charged to each order each period using the standard overhead rate for standard labor hours allowed. This calculation, after each order has been totalled, forms part of a journal entry to the general ledger.

Actual expenses for yard and kiln departments are entered in the accounts covering these sections. Although this expense is considered part of material cost, control is maintained through the budget by comparing actual with budgeted expense.

REPORTS FOR MANAGEMENT

Brief mention has been made of reports forwarded to management for control purposes. The purpose of these reports, other than the operating and balance sheet statements, is to point out to those in responsible positions deviations from normal or expected performance, thereby assisting them in the control of costs. If reports are received too late for corrective action, the basic reason for compiling figures to make reports has been lost, and the cost department is not properly fulfilling its purpose, which is not mere cost finding, but the presentation of differences so that management can quickly appraise the effect on profit.

We attempt to follow the principle of "Management by Exception" by marking all unfavorable variances so they stand out from other figures, thus drawing them to the attention of anyone reading the report in a hurry. However, all variances are shown because it is felt this approach shows those responsible the net effect of their efforts, and yet allows them to choose unfavorable variances for corrective action.

The following reports are issued:—

DAILY—A daily report is issued to each department supervisor with copies to his foremen. Included for corrective action, if necessary, is the difference between material allowed and used, labor allowed and spent by operation, together with the departmental labor force in use. Material variances shown are for orders which have been through breakout only. This information is readily obtained from our job cost sheets with the exception of the labor force, which is obtained from payroll. A copy for the plant manager is issued to him for any department upon request.

WEEKLY—A weekly summary of material and labor variances by department is provided for the plant manager. This summary shows all variances, and is quite similar to our daily report to supervisors. All unfavorable variances are marked so they can be quickly spotted.

MONTHLY—A monthly report is written covering total material quantity variances and labor efficiency variances by department only. This is a summary for each period of all daily reports issued. Copies are provided for the factory manager and producing department supervisors as soon as possible after the end of a period.

In addition, another summary (Figure 4) showing material price variances, labor rate variances, and overhead controllable and volume variances is written for the factory manager. Both of these statements are used at a supervisory meeting held regularly to discuss problems and make decisions regarding efficiency improvements. The cost accountant attends those meetings and offers explanations of variances which may be required.

Monthly profit and loss and balance sheet statements are also provided to assist in proper control of the business.

CONCLUSION

The reader will notice that standards have been applied on a job order basis in some instances. There is a slight error in this application, namely costs of an operation charged to an order, and that operation for the order is not complete at period ends. This discrepancy is corrected in variances reported at the end of each fiscal year so that year-end profit statements will be correct. The variances are reported by order for ease and speed of operation plus reductions of clerical assistance required. It is also felt the method offers rapid comparisons of any shop orders as soon as breakout operations are completed or at the completion of any machining operation. An attempt is made at the end of each period to have as few orders as possible part way through an operation.

If this paper has shown a practical standard cost accounting approach to the many problems inherent to hardwood conversion, it has served its purpose.

For further reading

COST ESTIMATES FOR WOOD PRODUCT PRICES, V. E. Noltmeyer, N.A.C.A. Bulletin, June, 1955.

COST REPORTING IN THE LUMBER INDUSTRY, J. S. Parris, N.A.C.A. Bulletin, Jan., 1956.

LUMBER COSTS, DIRECT VS. ABSORPTION, Frank M. Carter, Cost and Management, Feb., 1956.

PERSONALS

F. B. BEARDSLEY, a General Member of the Vancouver Chapter, has been appointed Comptroller for Crippen-Wright Engineering Ltd.

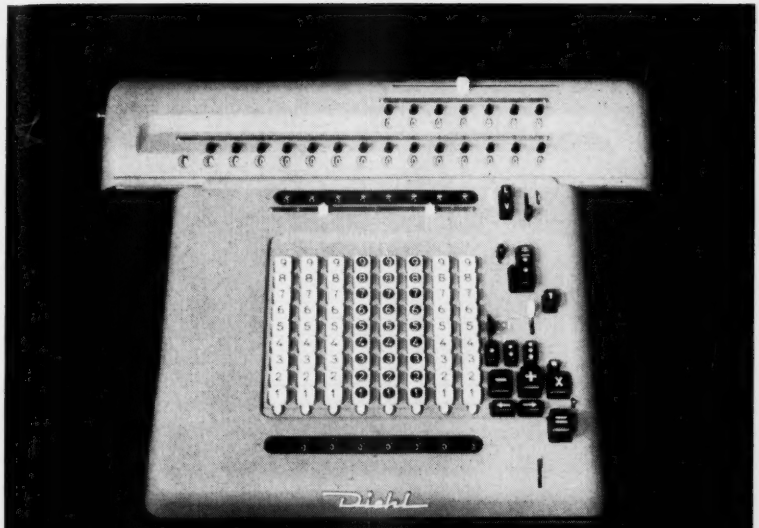
G. B. CLARKE, B. Com., C.A., has been appointed Treasurer of Dow Brewery Ltd., Montreal. Mr. Clarke is President of the Society of Industrial and Cost Accountants of Quebec and a General Member of the Montreal Chapter.

K. N. MELVIN, a General Member of the Saint John, N.B., Chapter has been appointed General Manager of Murray & Gregory, Limited. Formerly Office Manager, Mr. Melvin has been with this company 22 years.

E. A. ASH, formerly Chief Accountant with the C.N.R.'s Newfoundland District, St. John's, has been appointed Administrative Assistant, Regional Accounting Office, Moncton.

OBITUARY

The Society regrets to announce the death of Walter James Macdonald, F.C.A., R.I.A., of Winnipeg, a Charter Member and one of the leading figures in the Society of Industrial and Cost Accountants of Manitoba. Mr. Macdonald had been a member of the Provincial Society since the first Annual Meeting in 1921 and played a prominent part in its organization and subsequent incorporation. He was active in many spheres of Society work and had done much to further cooperation between the Society and the Canadian Institute of Chartered Accountants. At his death, he was Senior Partner for Canada of Deloitte, Plender, Haskins & Sells. The Society extends deepest sympathy to Mr. Macdonald's family.



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SALES AND SERVICE ACROSS CANADA

RENOWNED THROUGHOUT THE WORLD FOR SUPERLATIVE QUALITY AND OUTSTANDING VALUE

The Economic SCENE . . .

by W. Allan Beckett

THE CANADIAN ECONOMIC OUTLOOK FOR 1960

SUMMARY

CANADIAN business enters 1960 in the prosperous phase of the cycle. Activity reaccelerated late in 1959 and the forward thrust may carry a good deal of the way through 1960. The chances of difficulties emerging by the fourth quarter of 1960 are better than even. It is likely that we will see another recession in 1961, and it may be more serious than the last one.

GENERAL TRENDS

In over-all terms, the Gross National Product will rise steadily for the first three quarters of 1960, and will hold near that level for the last three months of the year. For the year as a whole, G.N.P. will increase by about 5% from the indicated 1959 rate of $34.9 billion to $36.6 billion.

Industrial production, based on 1949=100, had reached 167 at last count. This index should rise until September and hit a peak in the 178 to 182 range. Employment will rise in line with production, and productivity increases will be near normal with the possibility of a squeeze later in the year. Unemployment will recede in the early part of the year, but will rise toward the year end, seasonal factors apart; for the year as a whole, unemployment will average between 4-5% of the labor force. Prices will continue to drift mildly upwards. Tight money will return with a vengeance and interest rates will exceed even the high levels of the summer of 1959.

THE DEMAND FOR GOODS

In contrast to 1959, the main increment to demand will come from business spending on new plant and equipment and on inventories. Business fixed capital formation began to rise in the second quarter of 1959, and based on the forward indications of new orders for capital goods and contracts awarded for new construction, the advance is likely to carry through most of 1960. Housing is likely to experience a dull first half and its revival later in the year may turn on government policy.

As the volume of business rises, and with few bottlenecks in supply, business may be expected to add further to its inventories. Production schedules may well rise more steeply than final demand, and later in 1960, part of the increase in inventories may be unplanned and unwarranted. It is this potential weakness that could trigger a downturn for 1961.

Consumer expenditures will be well maintained in 1960, although the rate of growth may not be as sharp as in 1959. Non-durable goods and services will experience a relatively better year than durable goods. Sales of appliances, furniture and furnishings, which rose sharply in 1959 may do a turnabout.

Government spending will rise, paced primarily by provincial and municipal spending on capital projects. The federal government will operate with a fiscal surplus as the official fight against inflation continues.

Foreign demand for the products of Canadian industry will register a healthy increase in 1960. The U.S. recovery, re-propelled by the steel strike rebound, will call for larger imports of Canadian mineral and forest products.

Prosperity is continuing in Canada's other major markets abroad—in Great Britain, Western Europe and Japan. Exporters will continue to face more competitive conditions, but should be able to increase their absolute sales, although not their market share abroad. Imports will rise in response to increased domestic investment and the anticipated growth in inventories. As a result, our deficit on foreign trade will continue to grow. This may at last make its impact felt on the external value of the dollar which will retreat from its current high premium.

SUPPLY OF PRODUCTIVE FACTORS

The expansion of domestic and foreign demand will call forth an enlarged volume of production and employment. In aggregate terms, production will move toward a more balanced position relative to capacity. Still, the pace of the advance is projected to be less than Canada experienced in earlier prosperities and the pressure on available supplies of capital, labor and materials will be less intense.

Industries that will experience relatively sharp growth rates include base metals, steel, chemicals, newsprint. Consumer soft goods industries should also feel the tempo of increased demand. The hard goods group and their supplier industries may suffer later in 1960. Building suppliers related to non-residential construction will feel the impact of stepped-up spending, but those related to housing may have to wait until later in 1960 for the return of a stronger market.

POTENTIAL DANGERS

As prosperity rolls to maturity, certain traditional strains and stresses develop. Among these are included tighter and more expensive money, a phenomenon that is already with us. Productivity increases slow as marginal plant and labor are brought into production. Wage rates and labor costs rise more rapidly than final prices, leading to a squeeze on profit margins. The combination of high interest rates and reduced profit expectations leads to a stock market reaction. Finally, the unplanned increase in inventories imposes an additional cost burden and the stage is set for a reaction.

These signs are expected to appear gradually as 1960 progresses. As they do, it will be possible to assess more clearly the chances of a peak in prosperity occuring late in the year or early in 1961.

PAYNE, PATTON & PUGSLEY

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THE ACCOUNTANT AND THE ELECTRONIC SCIENTIFIC COMPUTERS

By William G. Britt,
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Data Processing Division,
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Dallas, Texas.

Since the accountant is often called upon to coordinate computer installations, he should be familiar with the types of computers available in both accounting and engineering or scientific fields. This article gives a run-down of the types of equipment available, the uses to which they can be put and the comparative advantages of large versus small computers.

DIGITAL electronic computers have made two major contributions in scientific and engineering applications which were hardly possible for computers of pre-electronic vintage. First, they have solved many problems too large for even a lifetime of horse-and-buggy methods of computation. Second, by assuming the burden of repetitious computations, they have provided engineers with more time for creative thought. With the revolution taking place in the scientific and engineering area of business, it becomes imperative for the accountant to have a knowledge of all types of computers and where they can and should fit into the over-all business picture.

There are many electronic computers on the market today that are used purely as accounting computers. There are other computers used purely as scientific or engineering computers, and, of course, there are some that are used as a combination of accounting and scientific. There are also many special purpose electronic computers, but since they are usually installed to handle a specific problem and are thus basically a black box rather than a computer, we will disregard them for purposes of this discussion.

THE ACCOUNTANT'S ROLE

The accountant must be in a position to wear several hats when discussing electronic computers. First, he must be able to make decisions on electronic computers as they will affect the accounting phase of the work. If the computer has to be used on accounting as well as engineering or scientific computation, he must know the full effects of such a combination use on accounting so that he will be assured the accounting portion will be properly executed. Many times it is better to keep the accounting work and the engineering and scientific work separate as far as computers are concerned. If the accounting work is moving along smoothly and there would be no improvement by converting the work to an electronic computer, then it is better to set up a separate computing set-up for engineering and scientific computation. By knowing that such computers are available and by knowing something

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A native Texan, Mr. Britt is a graduate of the University of Texas. He is presently Dallas District Manager of the Data Processing Division of the Royal McBee Corporation. A member of the National Association of Accountants since 1946, Mr. Britt has been president of the Dallas Chapter, as well as Vice-President, Director of Programs, Membership and News Letters.

of their capabilities, the accountant is then in a position to decide the best way to do accounting work and the best way to do engineering work without making unnecessary changes in order to justify a computer.

Second, as a member of the management team, the accountant must be in a position to advise management on the type of computer or computers that will best fit the needs of their particular organization. Thus he must know all types of computers and their effect on the business, even though they are in no way directly connected with the accounting phase.

Third, in larger companies where you have a centralized computing set-up or a decentralized computing set-up with several computers at the point of use, it is still necessary for someone to be in charge of coordinating all computer activity. This person will usually coordinate the planning phases of getting ready for the computer and then will actually coordinate the use of the computer or computers. In order to do this, he must have a complete view of the computer field. By the nature of his training, this role of coordinator will often fall to the accountant and thus he must be able to evaluate and utilize scientific and engineering type of computers as well as the pure accounting type of computers.

THE USE OF ELECTRONIC COMPUTERS

There are many theories or plans for the use of an electronic computer in business. When the electronic computer was first used in the business world on a fairly broad basis, the first theory followed was a centralized computing set-up with all the electronic computing equipment, whether accounting or scientific or engineering, completely centralized. This theory was followed because of the limited types of computers available, which seemed suited only for a centralized computing facility. There was also a limited number of people familiar with computers, computer programming and the actual operation of the computer. Thus efforts had to be concentrated in one location in order to make the best use of talent available. This centralization in one location created bottlenecks in programming which made it difficult, if not impossible, to get general use of electronic computers in engineering and scientific problems.

With the development of many small computers there arose the use theory of "Decentralized—Closed Shop" type of operation. Under this system, the computers were actually placed at the point of use. However, all programming and scheduling was done from a central point so that while physical location of the computer was decentralized, control was still centralized. When the magnetic drum, disc memories, and other types of memory systems were developed so that they could be economically used in small computers, there became available a large memory at a relatively modest cost and small physical size. This resulted in a tremendous growth of the use of small computers and made the whole computer field much more flexible. Under the decentralized-closed shop type of operation, the computers were such that they could be operated on a decentralized basis; however, owing to difficulty in programming and lack of general knowledge of computers and availability of personnel, control still had to be centralized in order to utilize technical personnel properly.

With the further development of small electronic computers, so that they became relatively simple to program and operate, there came the theory of a decentralized-

open shop type of operation. When the computer became such that the engineer and scientist could program the computer without a tremendous amount of training or any technical computer background, it became easier to get more and more people familiar with programming and operating of electronic computers. Under the decentralized-open shop type of operation, the electronic computer is located at the actual point of use in the research laboratory, the engineering department, or wherever it might be, and the personnel at the operating point are trained to program their own problems. They can operate the computer on their own problems or can have some of their clerical help operate the computer. Under this theory, overall coordination of the computer program is still necessary in any company. Moreover, the accountant must have a knowledge of all types of computers in order to evaluate the overall use of accounting and scientific computers properly, even though the computers may be physically located and operated at points far distant from the accounting function or department.

EVALUATING THE SCIENTIFIC COMPUTER

Generally, the scientific computers have the same basic set-up as the accounting computers in that there are various input methods; there is memory, there is computer logic, and there is the output, the main difference being in the relative speed, size and other factors which vary greatly between a scientific and an accounting type of computer.

INPUT: There are many methods of input in all types of computers, including paper tape, punched cards, typewriter or other type of keyboard input, and many other special types of input that are not in general use at this point and will not require our attention. With the scientific computer, the input requirements, as far as speed is concerned, are not nearly as demanding as in the accounting computer. The average engineering and scientific type of problem has far less data to be put into a machine than is the case in processing the inventory, sales analysis, payroll and other types of accounting application. Usually the engineer will make only one entry of data into the machine and let it grind out the answers, while in data processing, data are constantly going into and out of the machine. There are still many high-speed input methods available, even in smaller scientific computers. For example, many small computers have photo-electric readers for punched paper tape so that they can read in perhaps 4,000 words of information in about five minutes. Therefore, a wider range of input capacity is available for selecting the desired speed of a particular application.

MEMORY: The type and capacity of memory in the engineering or scientific computer become more valuable than in the accounting computer. Again, with the accounting type of computer you go in and out often, storing the data either in auxiliary storage or outside the machine in the form of punched tape, punched cards, etc. Since engineering and scientific computations are long and complicated mathematical equations, it becomes a prime advantage in an engineering type of computer to have an extremely large memory. With a large memory in a small computer, we then have what is known as a "Stored Program" type computer, in that the program is actually stored in the memory of the computer. The operator has only to feed the data in and the computer

goes through all the program steps. With a large memory, the engineer can work extremely large problems having a large amount of data without having to go in and out of the computer several times. This does away with the necessity of breaking up the problem which causes both programming and data handling problems. Thus, the size of the memory is very important in all types of computers. Available on the market today in the small computers are memory sizes ranging from 2,086 words to 4,096 words. In the larger computers there are memory sizes ranging from 2,000 words to many thousands.

There are also many types of auxiliary storage units in addition to prime memory, but here again, there is an additional problem of accessibility. This merely means—how long does it take the computer to get and then to execute the instruction or the data? Under auxiliary storage, punched paper tape, punched cards, magnetic tape, discs, cores and many other forms of storage are available. In the larger computers accessibility to the auxiliary storage is extremely fast, but against that must be evaluated the large size, greater cost and problems of operating the computer. In some of the smaller computers there is auxiliary storage which tends to slow down the computer. This must be evaluated against available prime memory space, or main memory, as, in many cases, the speed of working from main memory as against auxiliary memory will be 600 to 1,800 times faster.

LOGIC: There are several types of logic available, in that most of the logic will actually be built into the computer. In some cases the logic must be put into the computer in the form of wired boards, etc., which the operator must be able to prepare. In other cases the logic must be run into the computer in the form of punched tape which lets the operator set up the logic and run the computer step by step. This type of operation should be watched very closely since, where the operator or programmer has to program and operate the machine logic, it can be very slow and complicated, calling for a computer specialist rather than the regular engineers or scientists. The best situation, of course, is to have the logic built into the machine, which simplifies operation for both the programmer and the operator.

OUTPUT: Here again the answers required by engineers and scientists are not as long and detailed as those normally required from an accounting type computer, so that high speed, while helpful, is not a prime requisite. There are many types of output available, including punched tape, punched card, typewritten report and many combinations of these.

LARGE COMPUTER VERSUS SMALL COMPUTER

The decision of a small computer versus a large computer will never be finalized, since each situation must be separately evaluated and, in many cases, both will be used. Many companies already are adding small computers as satellites and locating them at the point of use. Invariably the small computer instead of taking the work away from the large computer, will generate more work for the large computer. This is due to the fact that often engineers and scientists away from computers do not realize that many problems can be easily adapted to electronic computers. By having a small computer available and becoming accustomed to organizing problems for

its use, they more readily recognize possibilities for economical solution of other problems on an electronic computer. Since small electronic computers with extremely large magnetic drum memories are now available that are much the same basically as the larger computers, it is easy to simulate the large computer on the smaller computers. Thus it is an easy matter to check out a problem on the small computer and later, if need be, transfer this problem to the large computer.

There are also many companies which have several small training computers in order to train their people; to accustom them to thinking in terms of electronic computers; and to enable them to program their problems accordingly. Subsequently they install a large computer and are completely prepared to make use of it by virtue of having their personnel trained and their problems programmed for a large computer. Again, the smaller computers are retained for solution of smaller problems.

The first obstacle an engineer faces in getting a problem solved on a giant computer is having the problem programmed; that is, put into machine language. This can create a delay unless adequate computing specialist services are available, since it is often a complex process requiring intensive training in the interpretative and compiler routines, which are constantly being revised and improved. This is sometimes true of the smaller computers, but new machines are being developed requiring simple programming which can readily be mastered by the engineer. Compiler and interpretative routines and programming routines have been built for the smaller computers to simplify programming even further. On one computer, for instance, by typing square root of A times B divided by the cosine of C, it is possible for the machine to program the problem.

The second problem an engineer encounters in having a problem solved on the larger computer is the dual one of communication and scheduling after programming is completed. The data must be sent to the central installation each time a run is made and the results sent back to the engineer. If questions or changes in data arise, the engineer has to start all over again, return the data to the installation and get new answers. With a small computer at the point of use, the engineer can change his data, change his problem and run many variable solutions without great loss of time.

It should be remembered that most of the larger or giant computers have a definite advantage of speed and capacity. While any problem can be done on a small computer and/or a large computer, the size of the problem and the speed with which it must be accomplished will usually dictate the type of equipment to be used. However, in an engineering or scientific type of computer the evaluation should be made on the basis of the time that is required from the moment the engineer gets his problem until the moment he gets his answer. A speed is gauged on the overall time from problem to answer and not necessarily on the speed of any one phase of the operation.

In many cases a computer can be used for both accounting and engineering. However, it is found that more and more companies are trying to keep them separated if possible, since each department has its own unique problems.

Even though each department can have a different type of computer, all installations should be coordinated and mutually aware of all computing activities in order to be mutually helpful.

TOPICAL

comments

LOOKING AHEAD

Airlines will soon offer miniature executive suites to the travelling business man. Some of the features of the prototype models are: sliding swivel chairs, a folding in-the-wall desk with telephone, collapsible conference and work tables, and food galleys. (Can. Bus., Nov., 1959).

Optimism seems to be the keynote of economic growth in 1960. In the U.S. the second quarter of 1960 is forecast at an annual rate of over $500 million with a possibility of hitting that figure for the total year. (A.M.A. Bus. Outlook 1960).

In Canada the 1960 outlook is also good. A summary of opinions gives this picture:

Sales will increase for three out of four companies.

Net profits will increase for over half the business firms.

Prices will remain steady for three-quarters of firms and rise moderately for most of the rest.

Wages will likely rise 3%.

Spending on facilities will show a modest yearly gain. (Fin. Post, Nov. 28, 1959)

More world-wide firms are choosing Canada as a favorable international headquarters. The choice of this country as a site for the holding companies possibly stems from stable political and economic climate and some important tax advantages .(Fin. Post, Dec. 5, 1959).

The British Minister of Transport is leading the way in handling the London traffic by setting stringent laws on parking and loading areas. The results of this thankless but necessary experiment will be extended to other large cities if successful. No doubt North American officials will follow the proceedings with keen interest in the hope that they will find some help in attacking the increasing traffic problem. (Fin. Post, Dec. 5, 1959).

OF GENERAL INTEREST

Canadian Trade: So far this year the Canadian deficit on foreign trade is a monthly average of $60 million which is triple the amount for the same period last year. There has been a significant dip in export values without a compensatory decline in imports. World markets are becoming more competitive. Ottawa is faced with two opposing demands. The firms that sell to the domestic market want tariff protection and, on the other hand, the exporter opposes barriers lest his foreign customers retaliate. (Can. Bus., Nov., 1959).

A new conveyer belt system carries 1,000 tons of limestone per hour a distance of 5½ miles. The system is made up of seven belts feeding into one another. The longest belt is 2¼ miles. (Bus. Week, Nov. 21, 1959).

Oil pipe line mileage operated by 32 systems in Canada at the end of 1958 was 7,147. In 1950, seven systems operated 1,423 miles of line. Oil deliveries in 1958 were 274,773,000 barrels compared to 50,654,000 in 1950. In this eight-year period, both the line mileage and the volume of oil delivered increased by more than five times. (DBS, Nov. 27, 1959).

The Provincial Governments expect to spend $2,562 million in 1959-60. This will exceed revenues by $270 million. This deficit will be about $147 million more than the previous year. These figures do not provide for expenditure on debt retirement. The largest expenditures will be:

Transportation and Communication	27%
Health and Social Welfare	26%
Education	23%

Over the past five years, Provincial revenues have increased by $880 million (about 62%). Expenditures for the same period have jumped by $1,178 million (about 85%). (CTF, Nov. 1959).

Enrolment in 37 Canadian universities and colleges in degree or diploma studies in 1958 totalled 32,199 with 72.2% taking Arts and Science courses. Enrolment in non-credit courses was 88,554.

ON THE PERSONAL SIDE

The Canadian Railway price package that includes transportation, meals, tips and sleeping berths will be popular with business men who use the trains. The time limit is 60 days and the trip must extend between major cities. (Can. Bus., Nov., 1959).

The percentage of American non-farm home owners has increased from 51% in 1949 to 58% in 1959. The ratio of mortgage to total value rose from 37% to 47% for the same period. The present mortgage debt by category is:

44%	no mortgage
22%	under $5,000
22%	under $10,000
12%	over $10,000

Although mortgages have risen, the ability to pay has also increased. In 1958, non-farm mortgage payments used about 12% of gross family income which is the same ratio as in 1948. (Bus. Week, Nov. 21, 1959).

Pension plans covered 944,900 employees in 1958. There was an average of 1,124 employees per plan. Payments out of the fund amounted to $87 million and the balance of assets at the year end was $2,814 million. (DBS, Dec. 4, 1959).

J. EDGAR DION

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FEDERAL SALES TAX*

By Charles McLaughlin,
Tax Manager,
Canadian Industries Limited,
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The sales tax is now a firmly entrenched element in the federal tax structure, supplying 15% of federal tax revenues. In this article the author reviews the history of the sales tax, citing the main criticisms that have been levelled at the tax as reflected in the report of the Carter Committee and bringing the situation up to date as it now stands.

OUR fiscal structure at the municipal, provincial and federal levels of government covers the three following types of taxes:

1. Taxes on income 2. Taxes on expenditures 3. Taxes on property

In the first case, we have the income tax; in the second case, sales and excise taxes; and in the third case, real estate taxes and succession duties. In other words, taxes are levied first on the dollar that gets into the taxpayer's pocket by way of income, then on the dollar that gets out of the taxpayer's pocket by way of expenditure, and finally on the dollar that the taxpayer has succeeded in keeping in his pocket by way of property.

One of the principles of modern taxation is that everyone should contribute to the requirements of the State according to one's ability to pay. Because income is the best measure of one's ability to pay, economists are generally of the opinion that an income tax is the most equitable way of raising revenue. An income tax takes into consideration certain factors which affect a taxpayer's ability to pay such as the number of dependants, medical expenses, and contributions to charity. Thus an income tax takes into account not only the taxpayer's income but also his responsibilities (voluntarily assumed or not) which may be different from those of another taxpayer with the same income. With an income tax also, persons with very low incomes are excluded from payment of the tax. An income tax is therefore essentially a progressive tax. A tax on expenditures such as a sales tax, on the other hand, disregards the taxpayer's ability to pay and hits low-income people proportionately harder than high-income taxpayers. It must be added, however, that the regressiveness of a sales tax can be considerably reduced by granting exemptions for producers' goods and for those consumers' goods such as foodstuffs which constitute a high percentage of the expenditures made by low-income people. In choosing between taxes on income and taxes on expenditures, governments are usually guided

* An address given at a meeting of the Eastern Townships Chapter on Oct. 29, 1959.

Born in Huberdeau, Quebec, Mr. McLaughlin graduated in arts from St. Laurent College and later received his M. Com. from the University of Montreal. He trained in accountancy with Maheu, Noel & Co., qualifying for his C.A. in 1946. He subsequently served as Tax Assessor with the Montreal Taxation Division of the Department of National Revenue and as Supervisor with the Quebec Corporation Tax Service. In 1948, he joined C.I.L. as Tax Accountant, rising through a series of promotions to his present position of Tax Manager. Mr. McLaughlin lectures in taxation at Sir George Williams College, the University of Montreal and McGill University.

by economic and social considerations as well as by financial and political ones. This explains why most fiscal structures contain a measure of the two types of taxes since, although it may be desirable for social considerations to rely entirely on progressive taxes, it may be found expedient to rely partially on regressive taxes. This is the situation which prevails at our federal level of government where we have a good measure of both types of taxes. The federal tax structure is based mainly on the three following taxes:

1) the personal income tax which produces approximately 30% of federal tax revenues,
2) the corporation income tax with 23%, and
3) the manufacturers' sales tax with 15% of federal tax revenues.

The federal tax structure is therefore based mainly on progressive taxes and only partially on a sales tax the regressiveness of which has been considerably reduced by extensive exemptions. The sales tax occupies, nevertheless, an important position in the tax structure and so we propose to deal with the more important points.

HISTORY OF THE SALES TAX

The federal sales tax was introduced in 1920 and the rate was 1%.

It was then a multiple-stage or turnover sales tax which applied to all sales except those made by retailers or farmers.

In 1921, the rate was increased to 1½% and to 2¼% in 1922.

As a result of widespread criticism, the tax was changed in 1924 to a single-stage manufacturers' sales tax and the rate was increased to 6% in order to maintain approximately the same revenue as with the old form.

The rate was reduced to 5% in 1924, to 4% in 1927, to 3% in 1928, to 2% in 1929 and to 1% in 1930.

When the reduction was announced in 1927, the Minister of Finance indicated that the reduction was in accord with the principle of getting rid of the tax completely as soon as possible.

The depression, however, caused a change in government policy and the rate was increased to 4% in 1931, to 6% in 1932 and to 8% in 1936.

The sales tax has always been unpopular and has always met with criticism. In 1938, the Canadian Manufacturers Association argued for the repeal of the sales tax before the Rowell-Sirois Commission, charging that the tax unduly burdened consumers, that it was concealed from the public and that it tended to pyramid.

In its report, the Rowell-Sirois Commission indicated that the sales tax placed a heavier burden on the low income groups, that it raised costs and interfered with production, that it pyramided on the way to the final consumer, and that it was distributed in a regressive fashion. The conclusion was reached that a strong case existed for elimination of the tax, and its replacement by direct taxes.

During World War II, the rate was left unchanged. Building materials, exempted in 1938, were again made taxable together with household fuel and electricity, and many prepared foods. At the end of the war, those exemptions were restored.

In 1945, exemption was provided for the first time for machinery used in manufacturing. The Minister of Finance noted that the application of the tax to machinery was restricting reconversion and modernization. This change had been desired by manufacturers for many years, particularly because they felt that the tax on

machinery weakened their competitive position relative to foreign producers.

In 1951, the rate was increased to 10% and to 11% in 1959. Both increases were made as contributions to the Old Age Pension Fund.

At the present time, the sales tax stands as a firmly entrenched element in the federal tax structure. It has come to be regarded as almost inevitable in the face of large revenue needs. Extensive exemptions have mitigated criticisms by farm and labor groups.

BASIC APPROACH

Since 1924, the federal sales tax has been single-stage in character.

In order to ensure that a sales tax will be single-stage in its application, it is necessary to select for application of the tax some one level in the production-distribution system through which all goods pass. The levels used are usually:

1) the retail sale—the sale to the final consumer
2) the last wholesale transaction—the sale to the retailer
3) the sale by the manufacturer

Once the level is chosen, the firms selling at this level are licensed, and the tax is applied only when sales are made by a licensed firm to an unlicensed purchaser. Thus each particular article is taxed but once.

The level chosen by the federal government is the sale by the manufacturer. In certain cases, wholesalers are also licensed.

The manufacturers' level, however, involves a major problem, i.e. the treatment of products sold for use in further fabrication rather than for personal consumption.

If a sales tax is to be a truly single-stage levy, it must apply only to *consumption* goods. Otherwise the tax on goods used in further fabrication will increase the cost of consumption goods subject to tax. This would involve double taxation of consumption goods.

There are two possible ways of excluding producers' goods from the application of the tax:

1) By conditional exemption according to intended use
2) By unconditional exemption according to type of goods.

The second approach is by far the simplest, but it is feasible only for those producers' goods which are rarely used for consumption purposes.

MAIN EXEMPTIONS—PRODUCERS' GOODS

The main exemptions now extended to producers' goods consist of conditional exemptions for:

1) Raw materials
2) Processing materials
3) Machinery and apparatus
4) Goods entering into the cost of manufacture of fertilizers and farm implements
5) Equipment used in logging, mining and quarrying, and fishing
6) Building materials and goods used in the production of building materials

and unconditional exemptions for farm implements and machinery, farm seeds and fertilizers.

MAIN EXEMPTIONS—CONSUMERS' GOODS

Exemptions of consumption purchases are usually designed to reduce the regres-

siveness of the tax and improve the pattern of its distribution. They cover mostly:

1) Foods
2) Certain articles for medical use
3) Building materials
4) Electric power and fuel
5) Certain goods for educational and religious purposes
6) Sales to provincial governments
7) Sales to public hospitals
8) Export sales

REASONS FOR DISSATISFACTION

There has always been a certain amount of dissatisfaction with the federal sales tax among taxpayers and the main reasons for such dissatisfaction seem to have been the following:

1) Lack of adequate definition of sales price
2) Lack of appeal procedure
3) Restrictive scope of exemptions
4) Responsibility put on vendor for use of exemption certificates
5) Lack of publication of administrative rulings

Because of the changed pattern of distribution practices, more and more goods are sold by manufacturers direct to retailers and consumers. In such cases, selling prices are usually higher than they would be on sales to wholesalers because the manufacturer has to absorb distribution functions. Although the Act requires payment of the tax on the selling price, the Department long ago introduced a procedure whereby, in certain cases, discounts are allowed from the selling price in order to reduce it to the wholesale level in the case of a manufacturer selling directly to retailers or consumers. The Canadian Tax Foundation undertook a study of that particular problem. Differences of opinion arose, however, on its solution. One group was in favor of a valuation procedure rigidly codified in the statute while another group advocated statutory sanction for the present Departmental procedures.

There is no effective appeal procedure in the present Act, and it has long been demanded that procedure be introduced to cover all aspects of the sales tax.

The most general complaint has been about the restrictive scope of the exemptions. It is felt that the exemption of producers' goods does not go far enough and that too much sales tax still enters into the cost of taxable consumers' goods. The exemptions covering production machinery and building materials, in particular, are considered unduly restrictive. It is considered that all industrial equipment used directly or indirectly in production should be exempt. It is felt that pipes, valves and fittings should be exempt unconditionally and that all containers also should be exempt.

It is felt that too much responsibility is put on the vendor in the use of exemption certificates. A shifting of responsibility from the vendor to the purchaser has long been desired.

One general complaint has been about the lack of publication of rulings. Taxpayers have complained often that they heard about a ruling given to a competitor long after it had been issued.

These complaints finally led to the appointment of an enquiry committee known

as the Carter Committee on July 1, 1955 which was to conduct a study and make recommendations on sales tax to the federal government. Thirty-one professional, industrial and trade associations prepared briefs for submission to the Carter Committee.

TERMS OF REFERENCE OF CARTER COMMITTEE

The terms of reference of this committee were the following:

1. To examine the problem arising under sales and excise taxes where manufacturers sell to customers at different levels in the marketing process and to make recommendations for a definition of a tax base or statutory method of administrative practice designed to equalize approximately the tax payable on goods of like value.
2. To examine the question of appeals from taxes imposed under the Excise Tax Act and make recommendations with regard thereto.
3. To examine the problem arising under sales and excise taxes with regard to the tax payable by importers of goods and that payable by manufacturers in Canada of goods of like value when sold to customers at different levels in the marketing process and to make recommendations with regard thereto.
4. To examine the system of exemptions for goods based upon the use of such goods and recommend any changes which may achieve greater simplicity and certainty without substantial loss of revenue.

RECOMMENDATIONS OF THE C.M.A.

I would like to refer briefly here to the submission to the Carter Committee made by the Canadian Manufacturers Association. The members of that Association are involved in every type of manufacturing activity throughout Canada and their views on the subject of the manufacturers' sales tax should be of interest.

Dealing with the first term of reference, the Association was of the opinion that the present methods of fixing sale price in an amount other than actual price should be retained as an administrative method of equalizing tax payable on goods of like value. The Association's view was that the only workable criterion upon which the value of goods may be determined is price, and that price should therefore be the basic standard under which tax liability is to be determined. Where sales are made at different levels in the marketing process, the Association was of the opinion that the Minister of National Revenue should have the power and authority to establish national prices designed to equalize the incidence of the tax at the manufacturer's level.

Dealing with the second term of reference, the Association recommended the formation of an appellate body under the chairmanship of a lawyer with accountants and business men as members. The Association suggested that one method of establishing such a board would be to reconstitute the Income Tax Appeal Board and the Tariff Board as the Tax Appeal Board, with Excise Tax, Income Tax and Customs Tariff Divisions. On the subject of appeals to such a Tax Appeal Board, the Association's view was that some compromise should be reached between the opposing principles of fair hearing and trade secrecy. If hearings are not conducted in accordance with the traditional principles of justice to which our courts normally adhere, the appeal provisions suggested above will serve no useful purpose. On the other hand, if confidential trade information is producible without restric-

tion on any appeal, many taxpayers would undoubtedly be compelled to waive their statutory right of appeal in order to avoid revealing their trade practices and pricing policies to their competitors.

In so far as the third term of reference was concerned, the Association recognized that the incidence of sales tax on those imported goods which compete with goods of Canadian manufacture, particularly at different levels in the marketing process, creates a sales tax inequity. In order to eliminate the sales tax inequity, notional prices should bring them to common levels in the marketing process. The Association also recognized that injustice exists where importers package and distribute goods imported in bulk, accounting for tax only on the duty paid value of the goods. Such importers enjoy a substantial tax advantage over domestic manufacturers who account for tax on their selling price. It was the Association's view that imported goods subjected in Canada to any manufacturing operation, including breaking bulk and packaging, should be subject to tax on their selling price.

Dealing with the fourth term of reference, the Association was of the opinion that the most troublesome exemptions from the administrative standpoint and the most criticized on the ground of uncertainty and inconsistency in their application are the exemptions for production machinery and apparatus, processing materials and building materials. It was pointed out that exemptions such as these which are conditional on end use inevitably lead to administrative difficulties. The Association recommended that, in the interest of achieving simplicity and certainty and avoiding double incidence of the tax, the conditional nature of the exemptions be eliminated from the Act to the greatest possible extent. At this point, I would like to quote an extract from the Association's submission:

"As a basic framework for a system of exemptions which would go a long way towards achieving this objective, it is suggested that the present exemptions for production machinery and apparatus and for processing materials might be combined into a single exemption along the lines of an exemption which has been in effect for some time. We refer to the exemption for articles which enter into the cost of manufacture of fertilizers and of certain specified agricultural implements and agricultural machinery.

"While such an exemption would not entirely eliminate the conditional factor, in that the exemption would still be conditional on the goods entering into the cost of manufacture or production of other goods, it would, in our opinion, make for much greater simplicity and certainty in administration. The question of whether or not any particular article enters into the cost of manufacture of goods is one which is capable of being answered with much greater ease and certainty than the question of whether or not the article is used directly in the manufacturing process. It is also our recommendation that the determination of whether or not any particular article enters into the cost of manufacture of goods should not be a matter for the discretion of the Minister but should be a question of fact to be determined in the circumstances of each individual case.

"It is suggested that this exemption might take the following form:

> 'Articles and materials which enter into the cost of manufacture or production of goods.'

"It is contemplated that this proposed exemption would be interpreted liberally

and would replace not only the present exemptions for production machinery and apparatus and for processing materials, but also several other existing exemptions for goods falling into the category of what are commonly referred to as 'producers' goods', to distinguish them from 'consumer goods'.

"Not only would the proposed exemption replace a good many of the existing exemptions, but if enacted in the form suggested above without any limitation, it would, in some cases, considerably extend the scope of the present exemptions. This would be most pronounced in the case of production machinery and apparatus and processing materials, but to a lesser degree the present scope of other exemptions would also be extended.

"For example, the exemption for materials to be 'used in, wrought into, or attached to taxable goods manufactured for sale', which now applies only where the manufactured goods are subject to tax would, under the proposed exemption, be extended to include manufactured goods which are exempt from tax. We recommend this because the failure to exempt raw materials used in the manufacture of tax-exempt goods is inconsistent with and, to a considerable extent, defeats the purpose of the exemption for the finished product.

"It is further recommended that any limitations which, for practical considerations of revenue, might be considered necessary should be by way of *exception* of certain specific classes of goods from the exemption proposed above, for example, office equipment and motor vehicles, which are now expressly excepted from the present exemption for production machinery and apparatus.

"In a recent publication, the Canadian Tax Foundation has estimated the revenue from tax on 'producer goods' at $175,000,000. While this amount might be considered substantial, it is the opinion of the Association that the exception from the proposed exemption of a comparatively short list of specific goods would reduce this amount to a point where the loss of revenue would not be considered unduly severe.

"Accordingly, since practical considerations of revenue require that some limitation be imposed, we recommend that the following amendment to the proposed exemption should be enacted:

> 'Articles and materials which enter into the cost of manufacture or production of goods, except the following:'

A list of the articles and materials which would be excepted from the above exemption would be appended or set forth in a separate schedule.

"The advantages of the form of exemption proposed above are as follows:—

1. It recognizes the principle of single incidence of the tax insofar as practical considerations of revenue will permit.
2. It consolidates in one exemption several of the conditional exemptions now in effect.
3. Since it would extend to all articles and materials entering into the cost of manufacture or production of goods, except those specifically excepted from the exemption, it would make for greater certainty as to what goods would qualify for exemption.
4. It would simplify the classification of goods of unknown end-use, for example, under the proposed exemption all goods falling in the new category,

which would include pipes, valves and fittings and electrical wiring, conduit and cable, would be exempt from tax."

MAIN RECOMMENDATIONS OF CARTER COMMITTEE

The recommendations of the Carter Committee were presented to the federal government on January 12, 1956 and can be divided into two categories:

a) One recommendation dealing with the shifting of the tax from the manufacturers' level to the level at which retailers purchase goods.

b) Recommendations dealing with the sales tax at the manufacturers' level.

That portion of the Committee report dealing with the sales tax at the manufacturers' level can be summarized as follows:

1. The Committee is of the opinion that more taxable goods are sold direct from manufacturers than pass through wholesalers. This requires the setting up of notional prices for those goods to be taxed on values equivalent to wholesale.
2. The Excise Tax Branch of the Department of National Revenue has developed a high degree of skill in the application of its valuation procedure. The Committee has been impressed with the relatively few complaints with its methods.
3. The most general complaint heard by the Committee is the lack of any right of appeal as to valuations.
4. It is therefore recommended that the existing valuation procedure should be continued for the present with statutory sanction.
5. The definition of the selling price in the Act should, where notional prices must be established, provide for an agreement between the taxpayer and the Minister. In the event of failure to reach agreement, the Minister should be empowered to fix such sale price as he may consider fair in the circumstances. The taxpayer should have the right of appeal to a Tax Appeal Board in respect of prices determined by the Minister. The Board should be empowered to fix the sale price without the Minister's determination.
6. All valuation agreements should be published in the Canada Gazette. Values fixed by the Minister and not covered by agreement should not be published.
7. One difficulty associated with the manufacturers' level is the varying extent to which manufacturers' operations extend into distribution functions. The Committee, however, does not feel that this difficulty justifies the replacement of the wholesale selling price by a "pure manufacturers' selling price."
8. Manufacturers complain about the "Unlicensed Wholesale Branch" technique. The Committee, however, considers it as a necessary feature of a sales tax at the manufacturers' level and it is recommended that it be given statutory sanction.
9. The practice of licensing wholesalers discriminates in favor of those wholesalers who get licenses to the extent that they carry taxable inventories. No complaint has been heard as to this discrimination. Wholesale licenses should therefore be continued so as to restrict tax-paid wholesale inventories.
10. In order that finality of liability may be established and the frequency of audit maintained, sales tax returns as filed should not be varied by the Minister after a period of two years from the filing date, except in cases

of misrepresentation or fraud.

11. The Act should provide for regulations by the Governor in Council in much the same form as Section 117 of the Income Tax Act.
12. An agency relationship should be deemed to exist between manufacturer and merchant in the case of specially branded goods.
13. Where an agency relationship exists or is deemed to exist, the merchant should be deemed to be a manufacturer.
14. The Act contains over twenty-five references to the Minister's discretion. Most of these discretions should be replaced by rules of law or by conferring authority on the Governor in Council to issue regulations.
15. It is the Committee's opinion that the following matters among others should be subject to appeal:
    a) Valuations
    b) Non-Arms-Length transactions
    c) Exemptions
    d) Status as manufacturer
    e) Penalty assessments

    It is therefore recommended that the appeal provisions of the Act be rewritten to give effect to the foregoing.
16. In appeals concerning valuations, each taxpayer should be entitled to dispute his own case without regard to valuations accorded to other taxpayers in his industry.
17. The Income Tax Appeal Board and the Tariff Board should be combined into a Tax Appeal Board to hear tariff, income and sales tax appeals. The subdivision of the Board and its operating methods should be left to the judgment of the Board. The procedures before the Board should permit of speedy and inexpensive appeals. The personnel of the Board should consist of business men and accountants as well as lawyers.
18. For sales tax purposes, the disparity between imported goods and comparable goods of domestic manufacture comes under two headings:
    a) Goods imported in bulk and packaged in Canada.
    b) Packaged goods that are purchased abroad at an earlier market level than they would be available in Canada or which are purchased at prices which omit some distribution costs.
19. The difficulty under (a) could be cured by a further extension of the definition of manufacturer. Matters coming under (b) primarily relate to customs valuations and customs officials are therefore urged to exercise the utmost care to see that Canadian products are not confronted with unfair competition because of valuations.
20. It is the Committee's opinion that the wording of most exemptions is unduly restrictive.
21. The machinery and apparatus exemption should be broadened so as to include equipment for the safety, health or comfort of the worker and equipment used in operations accessory to the process of manufacture or used to create conditions favorable to the process of manufacture.
22. It has been recommended to the Committee that all machinery and equip-

ment purchased by licensed manufacturers and wire and cable should be unconditionally exempt from tax. Those recommendations are not accepted by the Committee.

23. It is recommended that all rulings, interpretations, or intentions should be published immediately they are issued. Exceptions to this rule, however, should be made when secret formulae or business practices would be disclosed.
24. It is recommended that the Act be amended so as to hold purchasers fully responsible for the certificate they issue and to hold vendors responsible only in circumstances where the certificates are not in proper form or where it can be shown they have reason to believe they are false or inaccurate.
25. It is the Committee's view that no tax should be collected by licensed wholesalers on second-hand goods which can be shown to have been already taxed and it is recommended that if necessary the Act be amended.

IMPLEMENTATION TO DATE

What has the Government done or what does it intend to do about the Carter Committee Report?

First of all, it has been indicated that there is no question of ever adopting the recommendation dealing with shifting the tax from the manufacturers' level to the level at which retailers purchase goods. Insofar as the recommendations dealing with the manufacturers' level are concerned, it has been stated that the Committee Report is under study and that the result of such study would be made known in due course.

In the meantime, however, some recommendations of the Committee have been implemented. As an example, both building materials and production equipment exemptions have been broadened. More specifically, the production equipment exemption now covers, inter alia, the following items:

1) Safety devices and equipment for the prevention of accidents in the production of goods.
2) Systems installed by manufacturers or producers for exhausting dust and noxious fumes from their manufacturing operations.
3) Equipment used to carry refuse or waste from production machinery.
4) Equipment for hospitals and first aid stations in manufacturing establishments.

The last amendments to the Excise Tax Act have extended the definition of manufacturing to the packaging of toilet preparations and pharmaceuticals except where this is done in a retail store for sale directly to consumers. They have also extended the definition of manufacturer to any person who markets private brand toilet preparations and pharmaceuticals except a retailer who sells directly and exclusively to consumers.

In the sales tax area of the federal tax structure, the situation is now the following: we have had an inquiry committee; some of its recommendations will never be adopted; some have already been implemented; and others are under study. Whatever happens, the Carter Committee is not likely to have been the last word in federal sales tax.

Books in Review . . .

CORPORATE RECORDS RETENTION, VOLUME 2

A Guide to Canadian Federal and Provincial Requirements

Prepared for Controllership Foundation, Inc., Research Arm of Controllers Institute of America, by Robert B. Wheelan. Published and distributed by Controllership Foundation, Inc., New York 16, N.Y. pp. 275. $10.00.

Reviewed by J. F. Abercrombie, R.I.A.

This book is the second of a trilogy planned to bring together the various governmental requirements on the retention of records.

Volume 1, already issued, covers the requirements of the U.S. Federal Government and Volume 3, which has not yet been published, will investigate the requirements of the States of the U.S.

Volume 2, as the title indicates, is of special interest to Canadian firms. The concentration of legal excerpts is not intended to replace legal counsel but will show the requirements to which management is subject and demonstrate thereby the need for legal counsel when specific problems arise.

The book indicates statutes and/or regulations applicable to business generally and in the fields of taxation, labor and trade and commerce. It also covers particular requirements of the following industries: Aeronautics, Agriculture and Dairy, Banking, Drugs, Insurance, Mining, Motor Carriers, Petroleum, Trust Companies, Utilities—Electric, Gas, Water, Telecommunication, Railway.

By its very nature, the content of this reference book is not easy reading but two ready reference tables are provided which relieve the tedium.

Management, facing the vexed problem of records retention, will find the book illustrates additional reasons for the complexity of the problem. The value of the instrument of incorporation is obvious but businessmen may not be aware why and for how long they are required to keep other less significant documents such as the "hoisting-rope test record." The book is a commendable guide to the maze of requirements imposed by law.

We are fast becoming a nation of record keepers (in both senses of the phrase) and the reader will become more acutely aware of how much levels of government contribute to this development and how little to the problem of disposing of the records they inspire.

The presentation of contents illustrates and, it is hoped, will stimulate the need for as much uniformity as possible in legislation.

The book should be a useful reference to those who are involved with government and the matter of records retention—and perhaps even more valuable to those who do not wish to become involved.

ORGANIZING AND FINANCING BUSINESS, 6th EDITION

By Joseph H. Bonneville, Lloyd E. Dewey and Harry M. Kelly, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1959. pp. 381. $9.00.

Reviewed by John R. McPhee, R.I.A.

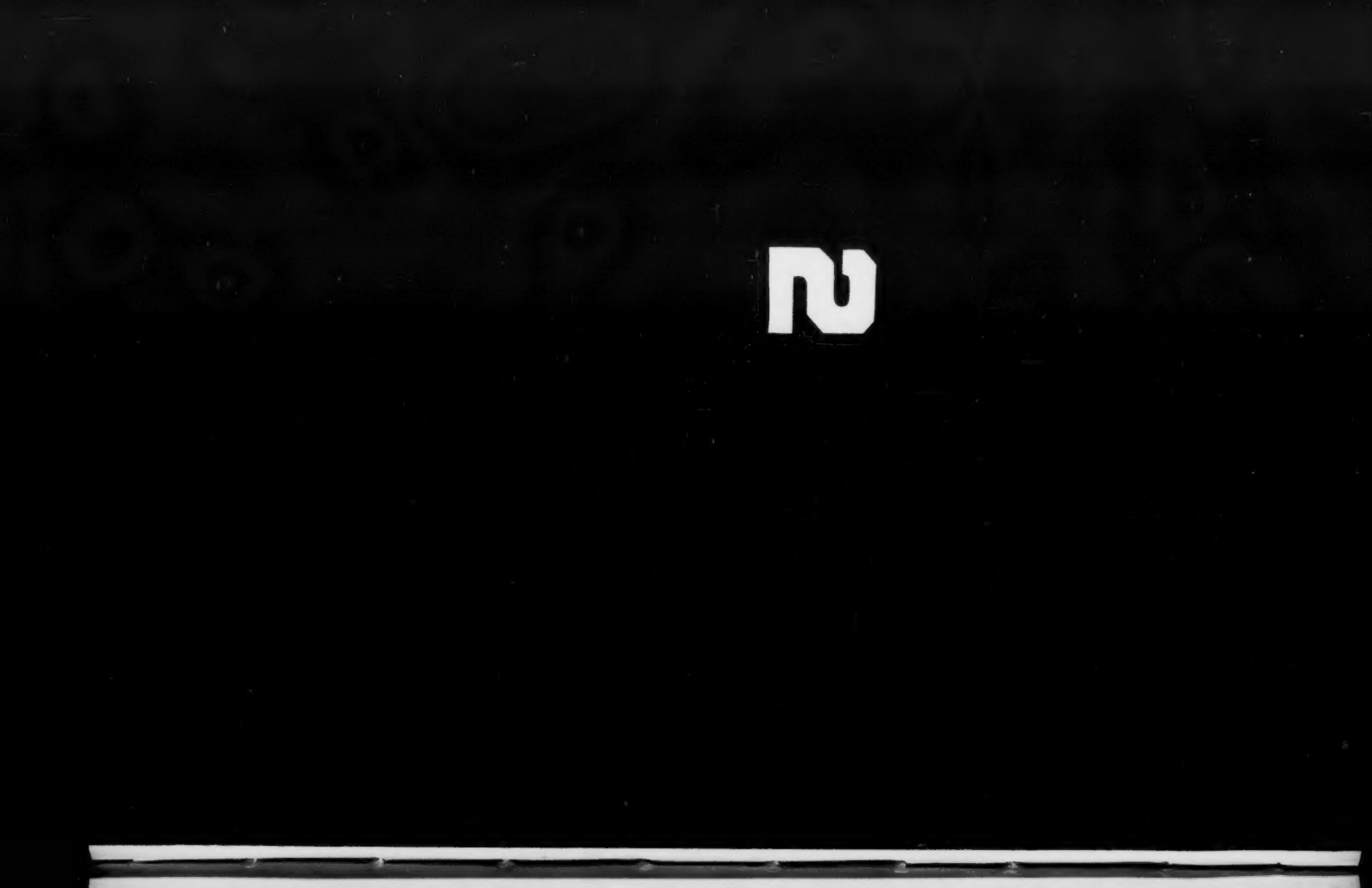
This is the sixth edition of a book originally written in 1932 by three members of the New York University faculty. This edition presents a broad and well-balanced treatment of the financial problems that may be encountered in organizing and financing a business.

This book gives a very clear interpretation of the means of financing by issuing stocks or bonds. Although this book is written in relation to legal requirements in the U.S.A., most of the information applies to Canada as well.

Questions and problems have been added to each chapter. The book is used as a textbook in several universities in the U.S.A. and may be used either for readers who desire only a general knowledge of the subject or for students who need a solid background for more advanced courses in finance, banking, or investments.

Books Added to Library...

Title	*Author*	*Publisher*
Administrative Action	Newman	Prentice-Hall, Inc.
The Administrator—Cases on Human Relations in Business (3rd Ed.)	Glover and Hower	Richard D. Irwin, Inc.
Advanced Accounting Problems —Theory and Practice	Chaykin and Zimering	John Wiley & Sons, Inc.
Analyses of Industrial Operations	Bowman and Fetter	Richard D. Irwin, Inc.
Analysis for Production Management	Bowman and Fetter	Richard D. Irwin, Inc.
Auditing Principles	Stettler	Prentice-Hall, Inc.
Babenroth's Modern Business Communication for Better Human Relations	Parkhurst	Prentice-Hall, Inc.
Basic Auditing Principles	Holmes	Richard D. Irwin, Inc.
Basic Business Finance—Text and Cases	Hunt, Williams and Donaldson	Richard D. Irwin, Inc.
Budgeting—Profit Planning and Control	Welsch	Prentice-Hall, Inc.
The Business Letter—Principles and Problems (Rev. Ed.)	Naether	Wm. C. Brown Company
Business Organization and Management	Petersen and Plowman	Richard D. Irwin, Inc.
Business Experience with Electronic Computers	Conway, Gibbons and Watts	Controllers Institute Research Foundation, Inc.



Cost and Management

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Editorial Comment . . .

Facing The Depreciation Problem

WE SHOULD perhaps start with the question: "Is there a problem in depreciation?" The answer must be positive if one looks at the large and still increasing number of writings on this subject in the professional literature of the English language. Special studies have been made, particularly since the second world war, dealing with the aspects of depreciation. Most recently, an NAA research report on "Current Practice In Accounting For Depreciation" is a clear indication that a problem not only exists but that its realization becomes increasingly stronger. The fundamental issue seems to arise from the accounting profession's failure to report on the effects of inflation in the statutory reports of our corporations. We steadfastly maintain in our accounts that our currency is stable, although everybody knows that this is not the case. The effect of inflation would be reflected also in our current assets and liabilities, but as we deal on the statements with items only, in these categories, which are destined to change their substance within one year, the effect of inflation is limited to the happenings of one year. This is not the case with fixed assets to which depreciation applies. It is therefore in this category where we face the biggest distortions through our neglect to ascertain the effects of the depreciation of our currency over the years.

Leaders in the accounting profession in the United States, like the late Marquis Eaton and most recently, Leonard Spacek, have highlighted the problem but to date no tangible results have become evident from these efforts to lead accounting out of the rut of convention, boosted by the axiom of consistency and continuity up to the summit where one could gain a clear and proper perspective to the problem in its manifold ramifications.

The aforementioned NAA research report states the following:

> "Notwithstanding the apparent prevalence of managerial opinion to the contrary, actual depreciation practice in the United States remains firmly anchored to historical cost. There has been no concerted action to bring depreciation charges into line with company financial requirements. This is attributed to

a number of factors, such as *lack of knowledge relative to inadequate depreciation,* the requirement that depreciation costs must be earned under prevailing competitive sales conditions, and tax regulations which limit depreciation charges to historical dollar expenditures."

In the United States the question is quite alive at this moment. In the October 1959 issue of *The Controller,* Walter R. Staub (Lybrand, Ross Bros. & Montgomery) wrote about "Current Trends in Depreciation Accounting." He stressed the argument that modernization and maintenance of plant have been deterred through taxes paid on allegedly overstated profits, which in turn has led to a deterioration of the U.S.' competitive position in the world. Staub states that, in his opinion, measures of price level adjustments could be evolved which would provide a reasonable degree of objectivity. We have claimed here years ago that "Depreciation is what the Income Tax Act and the Department of National Revenue regulations permit." Staub wonders "if business ever would really consider the adoption of price level adjusted depreciation until such time as it became also acceptable for the purpose of arriving at taxable income." He concludes his article with the wish "to see avowed need in . . . (improved reporting) . . . demonstrated by a more wide-spread use of supplementary information . . . (on the effect of inflation on depreciation)."

In connection with this article, *The Controller* reprinted three statements from the Committee on Accounting Procedure of the American Institute of Certified Public Accountants (1953); the study group sponsored by this Institute (1952) and by the American Accounting Association (1957). All these statements agree that supplementary financial schedules and notes should be used to present the effects of fluctuation in the value of the dollar upon net income and upon the financial position. But none of these bodies has, to date, come out with stronger statements which would make the presentation of supplementary information on the effects of inflation required good practice and thereby semi-compulsory.

The argument was raised that the public accounting profession serves the business community and should not try to compel management to produce and publish additional information which of course would cause added costs. It should not be expected that a sufficient number of individual companies would take the initiative themselves and start to produce supplementary financial statements showing the effects of inflation on depreciation charges. An individual move could put the progressive company starting this practice in an unfavorable light in comparison with a competitive company which would not disclose the inflationary inroads on its assets; apart from this undesirable effect, an individual effort would also suffer from lack of uniformity and comparability unless agreement could be reached first, in what form the supplementary financial statements should be presented, on what indices, if any, they should be based, and how they should be linked with the conventional presentation which should and will be continued.

The December 3, 1959 issue of *The Iron Age* starts a report on an industry survey pointing out the need for depreciation reform. This survey was directed to depreciation practices in the metal working industry. This report, by the way, mentions our Canadian depreciation practices based on the declining balance method, describing them as a very desirable method which would be favored by the metal working

industry in the U.S. if they were permitted to use this method and our rates there. Very pertinent questions are asked in the article:

"Is business primarily interested in paying less taxes? Or is it really sincere in its desire to modernize its equipment at a faster rate?" The majority of the companies questioned stated that they would use the faster depreciation rate for both book and tax purposes.

Business Horizons (School of Business, Indiana University) summer 1959 issue (Vol. 2) brings a report by Professor Ray M. Powell on Depreciation Reform. The author completed a sample study by personal interview with 150 first-ranking financial officers in 51 firms whose total capital appropriations and expenditures are a substantial part of the national total of the U.S.A. The main question was "Is the present deduction for depreciation contributing to an erosion of the productive capital of American Industry?" Mr. Powell's findings do not provide any clear cut answers to the problem. In the States, the discussion is complicated by the problem of capital gains treatment on sale of depreciable property at rates which are lower than the normal rates on operating profits. In Canada, Section 20 of the Income Tax Act assures the fiscus of recapturing any unrequired depreciation allowance.

We must realize that the issue remains confused as long as we complacently accept the use of depreciation as a fiscal measure for economic control (accelerated and deferred depreciation). We should also distinguish between financial and economic profits and not try to make the same answer serve both purposes.

Progress will be made only if and when the business community, headed by industry, displays determined leadership in really facing the problem. There is a great challenge in Canada for the leaders in industrial accounting to take the initiative in: (1) determining the problems and; (2) seeking to create a co-ordinating body with the powerful backing of corporate management and the representatives of public accounting. Such a body could arrive at generally acceptable *uniform* methods of presenting objective information in a field which, to date, certainly does not show much imagination, realism, efficiency, or determination, the main ingredients of leadership. The job could be done, but will we prove ourselves big enough to rise to the occasion?

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A CHANGE TO DIRECT COSTING

By E. J. Swartz,
Chief Accountant,
Union Metal Manufacturing Co.,
Canton, Ohio.

This company installed a complete new "standard direct cost system" and found the change brought many advantages. Most important, the system was invaluable in the preparation of realistic, competitive bidding prices. It also simplified cash forecasts and minimized clerical errors in reporting to management.

OUR COMPANY is a steel and aluminum fabricator of some 20 lines of products with approximately 50,000 active parts which must be guided through 15 production centres.

During the days when we were living with absorption costing, we had a complex system of job costs including engineered labor standards for the majority of our labor operations. A single plant-wide full burden absorption rate based on direct labor dollars was used for all departments. Consequently, departmental manufacturing expense absorption followed no basic pattern. The results were difficult to analyze and in no sense practical for management planning. It seemed almost a worthless effort to go through all the mechanics of clerical detail for the results obtained.

Faced with rising costs, keener competition and diminishing profit margins, we decided to install, as soon as possible, a completely new and modern cost system better suited to our needs.

WE ANALYZE OUR PROBLEM

We knew that if we produced and shipped the same number of like units in a given period, the beginning and ending inventories would not change and our profit and loss summary for the period would give the correct results. However, with fluctuating production levels and product mix, together with our single plant-wide absorption rate, we were constantly trying to explain this item of over or underabsorbed burden. Some non-accounting people used productive units as the barometer to real profits for the period. We tried to point out that when production for a given period falls below normal, or the point at which the burden rate absorbs all manufacturing expenses, an unfavorable variance (or underabsorbed burden) results. It can be stated that, for the period, all of the "out-of-pocket manufacturing expenses" or variable manufacturing expenses and a part of the fixed costs have been absorbed and charged to inventory. The balance of the fixed costs is expensed in the period.

The author has been with The Union Metal Manufacturing Co. of Canton, Ohio, for the past 30 years and is presently Chief Accountant there. He received his business education at the Canton Actual Business College.

When production is above normal, all of the "out-of-pocket manufacturing expenses" as well as fixed costs are charged to inventory. The favorable variance or overabsorbed fixed costs also charged to inventory appear as a *profit* in the profit and loss summary for the period.

We agreed that, if our profit and loss summary was to give uniform results, i.e. profits accruing from the sales factor only, our first move was to remove the manufacturing fixed costs from the absorption pool and expense them in the period in which they occurred.

WE APPROACH THE PROBLEM

After careful study, it was decided that our company revise the chart of accounts and install a full blown "standard direct cost system" to arrive at the answers we wanted with a minimum of effort. Management was quick to give its full support.

We did not have an accounting manual to support our chart of accounts. Consequently, with several people applying account numbers to vouchers and stores requisitions, similar items did not always find their way to the same accounts. For this reason, we decided to make a full-scale analysis of the previous nine months to determine what was in the accounts and prepare an accounting manual for future guidance.

In our work papers, errors in distribution were corrected and any manufacturing supply items which were expensed in a given month were amortized on a usage basis. It may seem to some that this part of the program was not necessary. However, in our case it proved important.

SEGREGATING FIXED AND VARIABLE COSTS

We now had a reliable basis for determining the behavior of costs and the segregation of the fixed and variable items. Our work papers showed all expense categories for 15 productive centres and 18 service centres for the nine-month period.

Our next move was to segregate the known fixed charges. Complete categories of expenses in service centres such as purchasing, cost and payroll, production control, product engineering, industrial engineering, personnel, safety and plant protection were classified as fixed.

Depreciation, real estate taxes, and personal property taxes are not spread by centres. These items are charged to general plant, a fixed charge.

Our shipping centre costs did not change much with shipping volume so this category was classified as fixed.

In our maintenance service centres, we continued to use a six-digit account number for labor and materials used. The first two digits identify the maintenance centre which does the work, the third and fourth digits indicate the function or type of expense, and the fifth and sixth digits identify the centre receiving the benefit or where the work was done.

At the end of the month, these six-digit charges are transferred through an intercentre transfer account from the maintenance centres which did the work to the centres where the work was performed. These charges become part of the variable burden of the centres receiving the benefit. The remaining costs in the maintenance centres are treated as fixed. Our nine-month work sheets included the results of handling maintenance costs in this manner.

In the production centres, expenses are classified as follows:

	Variable	*Fixed*
Supervision		X
Electricity	Consumption	Demand charge
Payroll taxes	Other labor	Supervision
Royalties	X	
Group insurance		X
Vacation pay		X
Holiday pay		X
Rentals		X
Perishable tools	X	
Supplies	X	
Repairs and Maintenance	X	
Material Handling	X	
Indirect Labor	X	
Insurance—Workmen's Comp.	X	X

If the behavior of an expense indicated that the variable portion was dominant, it was classified as variable. Since perfection is impracticable, our goal was to get reasonably close. The total variable burden for all productive centres was established for each of the nine months of the base period. The next move was to establish separate burden rates for each centre. These were to be based on direct labor hours in order to absorb the variable manufacturing expenses with least variance, either good or bad.

Standard costs, of course, were developed for all raw materials, purchased parts, and all manufactured parts at each state of manufacture. The whole program was timed for complete installation of the system at the next physical inventory date.

In the first two months of operation a few bugs had to be ironed out, but in the third month everything was working as planned. The profit and loss summary began to make sense because at last, there was consistency in the handling of fixed costs. Manufacturing costs included only those costs which were variable and moved in a constant flow with production. The fixed costs of manufacturing were isolated where management could see them. They were expensed in the period in which they occurred along with administrative and selling expenses on the profit and loss summary. Most important, they were no longer "kicked around" by a production denominator.

INVENTORY ADJUSTMENT FOR TAX PURPOSES

Our inventories for internal purposes are now valued on the standard direct cost basis. This method automatically eliminates any possibility of profits accruing in the profit and loss summary through over-absorption of fixed costs capitalized in inventories during periods of above normal production.

For tax purposes, however, inventories are adjusted to include allocable fixed costs. This can be done by determining the number of days needed to produce in-process and finished inventories. Divide this figure into the total number of working days in the year and you can come up with a percentage that represents the inven-

tory's share of total annual fixed costs. Add this sum to the inventories at the end of the fiscal or calendar year.

AN IMPROVED INCOME STATEMENT

Exhibit 1 is our method of presenting the profit and loss summary. From this exhibit, breakeven sales for the period can be readily determined based on the price and product mix involved. Breakeven sales volumes to absorb various levels of total fixed costs for current and future planning are available.

EXHIBIT 1

COMPARATIVE SUMMARY OF INCOME

The X. Y. Z. Mfg. Company

The Three Months Ended March 31, 1958

	Three Months			Increase over 1957	Percent of Net Sales		
					Three Months		
	March 1958	1958	1957		March 1958	1958	1957
GROSS SALES							
Returns and allowances							
Transportation charges							
Commissions to agents							
NET SALES							
Standard Direct Cost							
MARGINAL INCOME AT STANDARD							
STANDARD COST VARIANCES							
Purchase price							
Material usage							
Direct labor							
Daywork labor							
Manufacturing expense							
TOTAL DIRECT COST							
MARGINAL INCOME – actual							
PERIOD EXPENSES							
Manufacturing							
Administrative							
Selling							
INCOME BEFORE TAXES							
Federal Taxes on Income							
NET INCOME							

The manufacturing expense variance is now an insignificant item and contains no mysterious components as in the past.

Exhibit I is supported by a marginal income at standard statement which breaks down net sales, cost of sales, and marginal income percent of net sales by product lines. From this exhibit, you can see the effects of price-mix and product-mix. Important, too, the effect of a general price cut on a product line profit can be readily and accurately determined. Information of this type could point the way to a general price cut in a line aimed at gaining more sales volume to produce a greater profit in relation to fixed costs.

On about the third day of each month, our sales and production people estimate shipments for the month by product lines. Let us assume that there are four product lines and that the marginal income percent of sales, considering only sales sold at regular prices, is as follows:

Product A 20%
" B 30%
" C 40%
" D 50%

In Exhibit 2, the orders scheduled for shipment in the period are classified by product line and the normal marginal percentages are applied. This results in a total marginal contribution toward fixed costs of $18,700. Assuming that the fixed cost pool amounted to $15,000, income before taxes would be $3,700. However, product line mix and price mix alter the marginal percentage pattern.

EXHIBIT 2

ESTIMATE

		MARGINAL INCOME	
PRODUCT	SALES	% OF SALES	AMOUNT
A	$ 8,000	20	$ 1,600
B	12,000	30	3,600
C	15,000	40	6,000
D	15,000	50	7,500
	$ 50,000		$18,700

EXHIBIT 3

ACTUAL

		MARGINAL INCOME	
PRODUCT	SALES	% OF SALES	AMOUNT
A	$10,000	18	$ 1,800
B	15,000	27	4,050
C	12,500	40	5,000
D	12,500	50	6,250
	$50,000		$17,100

EXHIBIT 4

MARGINAL INCOME IN DOLLARS

PRODUCT	ESTIMATE	ACTUAL	OVER ESTIMATE	VOLUME	PRICE
A	$ 1,600	$ 1,800	$ 200	$ 360	(160)
B	3,600	4,050	450	810	(360)
C	6,000	5,000	(1000)	(1000)	0
D	7,500	6,250	(1250)	(1250)	0
	$18,700	$17,100	(1600)	(1080)	(520)

In Exhibit 3, we show actual sales, totalling as estimated, but producing $1,600 less margin. In comparing the estimate with the actual in Exhibit 4, we find that product A sales volume was $2,000 in excess of the estimate. At the 18% marginal rate, this equals $360 increased margin due to volume, and a loss due to lower prices of $160 (2% of $8,000), or a net gain over the estimate of $200.

Product B sales volume exceeded the estimate by $3,000. At the 27% marginal rate, this equals $810. However, a drop from 30% to 27% in the marginal rate results in a loss, due to price, of $360, or a net gain over the estimate of $450.

Product lines C and D had losses due to volume of $1,000 and $1,250, respectively. The algebraic sum of the losses and gains due to volume and prices on all four product lines totals the $1,600 decrease from the estimate.

PRICING

To use "direct costs" for establishing bidding prices, representative "out-of-pocket" costs must be available on all items. A large company bidding a job against a small competitor must carefully consider fixed overhead in the price. On the other hand, "out-of-pocket" costs of the larger company, disregarding such items as discounts for quantity purchasing and production efficiency, should be comparable to that of the small company. At this point, each company must consider the capacity of the plant required to do the job and the relationship of the total fixed costs of the company to the capacity involved.

Good pricing, as we all know, requires an intimate knowledge of many factors of which the above are basic. As mentioned previously in this paper, each order shipped contributes to the fixed cost pool. In this connection, if we have idle production capacity and the "lost business report" contains bids which failed to qualify because of excessive application of fixed costs, we should remember this—"any fixed costs that might have been recovered in pricing our services to get these jobs"—are a definite loss. The fixed cost pool goes on unless management decides to cut it, if practicable.

An equitable allocation of fixed costs to products for pricing purposes and for a profit and loss analysis by products remains a problem. However, we do know that some expenses are directly related to a particular product and would be eliminated if the line were dropped. This type of fixed cost can be assigned without difficulty and should be set out on the product profit and loss analysis separately.

The balance of the fixed costs represents the bulk of the organizational set-up:—management, production facilities and the selling staff to carry on the business. In a business that manufactures a single product, there is no problem. Where more

than one product is involved, perhaps a simple approach, without getting into a maze of detailed allocation, would be to determine on an estimated basis the percentage of the total plant capacity each product is assigned and spread these fixed costs proportionately. By use of this method, the allocated fixed costs are set out in the open on the product profit and loss. From these allocations, unit fixed costs for each product can be developed for use in price determination.

SUMMARY

Our happy experience with the new system leads us to believe that while direct costing may not be the answer for all companies, it was for us an important step in the right direction. Most important, we find that direct costing is invaluable in preparation of realistic, competitive bids. Fewer of the "big ones"—the orders that we hate to lose to competition—are getting away. Direct costing helps, too, in preparation of cash forecasts. With the new system, figures are readily available when we wish to insure fixed costs and profits with "business interruption insurance."

Important, too, we can minimize clerical errors in the application of "standard direct costs" against sales by testing margins against standard margins and investigating any deviations before releasing the results to management.

For further reading

THE MARGINAL INCOME CONCEPT IN COST ACCOUNTING, by Alphonse Riverin, Cost and Management, Feb. 1958.

DIRECT COSTING OPENS THE DOOR TO PROFIT PLANNING, by Charles Reitell, N.A.A. Bulletin, April 1958.

DIRECT COSTING FOR A STEEL FABRICATOR, by L. E. Whisnant, N.A.C.A. Bulletin, May 1956.

DIRECT COSTING, N.A.C.A. Research Report Series No. 23, April 1953.

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The Economic SCENE . . .

by W. Allan Beckett

IT IS NOW generally agreed that Canadian economic activity will rise more rapidly in 1960 than it did in 1959. Sparking the advance will be a 10% increase in business spending for new plant, machinery and equipment. Exports, particularly of basic minerals and forest products, are expected to rise by better than 5%. Superimposed on these increases in final demand, it is likely that business will attempt to increase working inventories of raw materials. What are the implications of these changes for commodity prices?

Despite the increases envisaged in physical activity, world supplies of most major commodities are still reasonably ample. Demand and supply will be in closer balance than was the case in 1959, but no intense pressure is foreseen. Thus price increases in general are likely to be cyclical rather than inflationary in nature, contrary to the experience in 1950 and 1956.

BASE METALS

Canadian base metal producers are likely to operate closer to capacity levels in 1960, in the light of strong American and overseas demand.

Copper has remained firm at 33¢ per pound, New York, despite strikes among major producers. Increasing demand will impart firmness to the red metal price. A further 2¢ - 3¢ rise would not be unexpected, but a sustained level above 36¢ is unlikely.

Zinc demand has been stimulated by the final settlement of the U.S. steel strike and the price has firmed to 13¢, St. Louis. With prospects for increased outlays in the machinery, equipment and allied fields in North America in 1960, zinc demand and price will remain firm throughout the year. Lead prices have been firm at 12¢, with visible supplies well in line with demand. Capacity appears ample to meet further increases in demand that may develop and price firmness is expected.

In all three future markets for these materials, speculators have been quiet and have suffered some stop loss sales. Speculative activity is likely to remain reasonably dormant.

Both nickel and aluminum will produce at higher and closer to capacity levels, but no price increases are anticipated.

STEEL

The settlement of the protracted steel strike has been widely publicized as an inflationary development. Increases of $16.00 per ton have been mooted. So far, nothing has developed. The initial wage cost of fringe benefits totals about $4.00 per ton, and an increase of this order or larger may be expected in the spring months.

The demand for steel, for capital goods industries and for automobiles, is likely to remain strong through most of 1960. In addition fabricators will be steadily adding to strike depleted inventories. The industry is likely to operate at close to capacity levels, allowing for normal seasonal patterns, until the autumn.

Under the terms of the strike settlement the next wage hike is due on December 1. Whether this leads to an additional price increase will depend on the then strength of continuing demand and the state of steel inventories.

Canadian iron ore will experience a good year in 1960 as the American steel industry makes up lost ground. Ore prices will be firm and a return to 1956 peak levels is quite possible.

FOREST PRODUCTS

Exports of Canadian forest products are forecast to reach new peaks in 1960. Newsprint and pulp will advance smartly under the pull of American prosperity. Canadian mills will operate at a higher level, but not at full capacity. In the light of this situation, and because of continuing competition of new U.S. capacity, no increase from the existing New York price of $1.34 per ton can be expected.

Lumber prices may soften, but not substantially, as housing activity declines in both the United States and Canada.

FARM AND FOOD PRODUCTS

Food prices, led by declines in meat and eggs, are likely to decline during the early part of 1960. Cattle and hogs supplies are ample, and in the latter case, the changed basis of price supports imparts a downward bias. Some foreign foods, coffee, cocoa and sugar are still revealing price weakness and no revival seems to be impending.

GENERAL PRICE INDEXES

The price index for basic industrial commodities is likely to advance by two or three per cent from its current level of 240 (1935 - 39 = 100), with the rise occurring in the first half of the year. Prices of intermediate and final goods may advance more slowly but more persistently in the face of higher final demand. The consumer price index will reflect the declines in food prices enough to offset changes in other components.

Factor prices—wage costs, and interest rates—are likely to rise most sharply in 1960. At the same time, productivity increase will narrow progressively as the year wears on. Profit margins are likely to be squeezed by the more rapid advance in costs than in revenues, a typical development in the later stages of prosperity. This usually has some dampening effect on business expectations which is reflected in stock market trends.

In summary, the price outlook envisages diverging trends. Modest increases in basic commodity prices, a more rapid advance in intermediate and final goods. Consumer prices will be held down by weakness in foods. Factor prices will rise most rapidly and lead to a squeeze on profits as the year draws to a close.

COST ACCOUNTING FOR THE WAREHOUSING AND TRANSFER INDUSTRY*

By K. M. Carter,
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Based on the operations of a hypothetical firm which is considered representative of the industry, this thesis describes a cost accounting system for the warehousing and transfer industry. By tracing operating costs directly to the vehicles involved, the system holds many advantages for management, as well as many in allied departments.

THE INDUSTRY GENERALLY

THE GROWTH of commercial warehousing has been due to the ever-widening search for consumer markets. In the largest centres of population, the manufacturers have always kept large supplies available for distribution. However in other centres, often far from the point of manufacture, they needed storage outlets from which the local retailers could be supplied. This is the task which the commercial warehouseman has undertaken. He guarantees to protect his client's goods from the time they are received and to deliver them safely, or have them delivered, to the places designated by the client.

The big problem in supplying service to customers was the need of return pay loads for the cartage firms. Self-help and co-operation between firms proved to be the answer, and today most firms belong to affiliations of hauling firms which extend all over the continent. Within such a group the rates are standardized, as are the vehicles and equipment used on the long distance trips. These units of equipment are dispatched from the central office of the chain in accordance with the work to be done and the equipment available. Thus, if a customer contracts with a Montreal member of the chain to have goods moved to Nova Scotia, the vehicle carrying the goods may be from New Brunswick, yet the rates and service given are exactly as contracted for and are subject to the rigid control of the central office.

In recent years the firms engaged in warehousing and transfer have attempted many sideline enterprises, such as furniture and rug cleaning, furniture sales, rug repairs, and de-mothing services. As a result, the organizational and financial setups within the industry are vastly more complicated than they were two decades ago.

Mr. Carter is a Registered Member and the first graduate of the Nova Scotia Society. Born and educated in Truro, N.S., he served five years in the Army during World War II. He then entered Dalhousie University where he obtained his Commerce degree. After graduating, he joined the market research department of Maritime Telegraph & Telephone Company and later the Maritime Warehousing and Transfer Company Limited as Accountant and Office Manager. It was at this time he completed his R.I.A. studies. For the past five and one-half years he has been employed in the Accounting Department of Nova Scotia Light and Power Company, Limited, where he is I.B.M. Supervisor.

*Condensation of a thesis submitted for R.I.A. qualification.

THE ENTERPRISE IN ACTION

The firm's operating facilities consist of two warehouses for storage and a fleet of trucks. This fleet is made up of 50 units varying in size from one-ton vehicles used for local delivery to the tractor-trailer units used for inter-city furniture hauling. There are 20 of these latter units and they are all built, decorated, and equipped according to the standard laid down by the affiliation of furniture movers.

Vehicle repairs and service are handled by the firm itself and a separate building is maintained for the purpose. This section of the firm, which is a service department to the cartage departments, is staffed by two mechanics and a mechanic-storeman. In addition to gasoline and oil, which are handled from this building, packing cases, excelsior, and other such items are stored here.

This firm does some shipping by rail and has a crating department which prepares goods for such shipment. This work is closely associated with furniture warehousing and the crating department is, in a sense, a sub-department of the furniture warehousing department.

The type of firm organization may be called Line and Staff since each man, while coming under the control of his own superintendent, may use any other departmental head in an advisory capacity. The total number employed by the firm is 125, of which 85 men work in the cartage departments.

The commercial warehousing portion of the firm receives, stores, and handles the goods of approximately 30 firms, but the firm specializes in furniture handling and does a good deal of door-to-door moving within the city and surrounding area. Furniture may also be picked up locally, to be stored for indefinite periods and then either delivered locally, crated and shipped by rail, or hauled by road to any part of the continent.

This enterprise forms part of an affiliation of furniture moving firms specializing in long distance highway transport. The fundamental purpose of this affiliation is to assure the customer good quality and standardized service at uniform rates. Contracts with the customer, which may be written by any member firm, are registered with the central office of the affiliation and the goods move under orders from the central dispatcher. For this reason, they may or may not be hauled in this firm's vehicles. However, by this means a truck making a long distance haul is assured of at least a part load for the return trip.

The name of this chain or affiliation of movers, for the purpose of this thesis, will be the Affiliated Furniture Movers.

THE SYSTEM IN GENERAL

The principle underlying the cost accounting system is that of departmentalization. The industry leaders are stressing this fundamental to an increasing degree since "it is necessary that all expenses be charged to the proper operations and whenever possible spread throughout the year so that the monthly unit costs will bear their proportionate share of the total."[1]

Exhibit 1 is a chart of accounts for the revenue and expense portion of the business. Account Nos. 50, 51, and 52 are used to record the direct trucking ex-

(1) L. W. Marshall, Cost Accounting and Accounting Trends in Warehouses (Chicago; The Furniture Warehouseman, November 1952), p. 20.

EXHIBIT I

CHART OF REVENUE AND EXPENSE ACCOUNTS

Account No. **REVENUE ACCOUNTS**

11 Affiliated Furniture Movers' Revenue:
- 1 Booking
- 2 Terminal Compensation
- 3 Hauling
- 4 Storage
- 5 Packing and Unpacking
- 6 Other

12 Other Furniture Cartage

13 Commercial Cartage

14 Furniture Warehousing:
- 1 Storage Revenue
- 2 Handling Revenue
- 3 Insurance Revenue

15 Commercial Warehousing:
- 1 Storage Revenue
- 2 Handling Revenue

16 Crating Revenue

17 Interest Income

18 Other Income

Account No. **EXPENSE ACCOUNTS**

50 Long Distance Cartage Expense:
- 1 Director Labor
- 2 Repairs
- 3 Gasoline and Oil
- 4 Tires and Tubes
- 5 Insurance
- 6 Depreciation
- 7 Licenses
- 8 Vehicle Supplies
- 9 Cartage Supplies
- 10 Claims

51 Local Furniture Cartage Expense:
Subsidiary accounts as in Account No. 50

52 Commercial Cartage Expense:
Subsidiary accounts as in Account No. 50

Account No. **EXPENSE ACCOUNTS**

53 General Cartage Overheads:
- 1 Indirect Labor
- 2 Superintendence
- 3 Workmen's Compensation Insurance
- 4 Unemployment Insurance
- 5 Insurance
- 6 Depreciation
- 7 Taxes
- 8 Supplies
- 9 Employees' Welfare
- 10 Claims

54 Furniture Warehousing Expense:
- 1 Labor
- 2 Superintendence
- 3 Workmen's Compensation Insurance
- 4 Unemployment Insurance
- 5 Insurance
- 6 Depreciation
- 7 Taxes
- 8 Supplies
- 9 Materials
- 10 Claims

55 Commercial Warehousing Expense:
Subsidiary accounts as in Account No. 54

56 Crating Expense:
Subsidiary accounts as in Account No. 54

57 Administration and General Expense:
- 1 Salaries and Wages
- 2 Taxes
- 3 Insurance
- 4 Workmen's Compensation Insurance
- 5 Unemployment Insurance
- 6 Employees' Welfare
- 7 Stationery and Supplies
- 8 Telephone and Telegraph
- 9 Light, Heat and Water
- 10 Depreciation

58 Administration Expense Applied:
- 1 General Cartage
- 2 Furniture Warehousing
- 3 Commercial Warehousing
- 4 Crating

penses for the long distance, local furniture, and commercial cartage portions of the firm. Thus any expense which can be correctly charged against a particular vehicle will be entered in one of these accounts.

Account No. 53 records the general expenses for the trucking section as a whole. The best way to describe this distinction is to say that the account records cartage expenses which cannot correctly or conveniently be charged against a particular vehicle. This will include the overhead expenses of the repair and maintenance department. In this regard it is important to note that the cost of mechanics' time and parts used on a repair job will be charged against Account Nos. 50, 51, or 52. However, such items as idle time, heat and light for the garage, etc. will appear in Account No. 53. It would, of course, be possible to set up a distinct set of accounts for the repair and maintenance department, thereby obtaining a more obvious overhead cost of running that department. This is considered unnecessary since the same figures can be obtained quite easily under the present system. A report is drawn up quarterly to show the departmental repair costs against the vehicles as against the cost of operating the repair and maintenance department, as shown in Exhibit II.

In addition to its own expenses, it is desirable that the cartage function bear a portion of the general expenses of running the whole firm. In the system discussed, the general cartage overhead account will include an apportioned amount of the administration and general expenses. This is done on an applied basis so each month's operations will only be charged with a fair portion of the annual overhead expense. Wherever possible, however, an expense should be directly charged.

The system of accounts thus described will give the cost of operating the trucking function of the firm. However, this is not a very complete distribution of operating costs since there are 50 vehicles involved, each of which represents a capital investment of from $4,000 to $18,000. It is therefore necessary to establish "cost centres" within the cartage departments. Each of the three cartage departments is a type of "operating unit" in that the vehicles therein are similar in size, equipment and work done. Each vehicle used by the firm is considered a cost centre and its costs of operation are recorded separately. Each vehicle operating within its own department is a portion of that operating unit.

The cost accounting system used in the remaining operating departments is not so intricate as that used in the cartage departments. It may be argued that it is more of a "cost finding system" than a cost accounting system in that the cost of storing a certain commercial unit, or crating a particular case, is not directly obtainable from the records.

As in the case of the cartage departments, all expenses incurred by the warehousing and crating functions are recorded in Account Nos. 54, 55, and 56. In addition, a portion of the administration and general expenses is charged against these accounts. The object, of course, is complete departmentalization of all expenses.

The warehouses are divided into sections of equal size. These divisions are used for the allotment of storage space and may consist simply of areas marked off on the floor or fenced and locked sections for the storage of valuable items. The customers are charged for the space occupied. Since the expenses of maintaining each section can be considered equal, the storage expenses of any customer are readily

EXHIBIT II

QUARTERLY REPORT OF REPAIRS AND MAINTENANCE DEPARTMENT DIRECT EXPENSES

Quarter Ending .....

Departmental Expense						Expense Applied to Vehicles				
Month	Parts	Labor	Light Heat & Water	Supplies	Total	Vehicle No.	W.O.	Parts	Labor	Quarterly Total
Jan.	1,695.00	550.00	5.00	10.00	2,260.00	3	6	1,200.00	85.00	1,285.00
Feb.	400.00	380.00	7.50	12.00	799.50	4	7	10.00	2.50	12.50
Mar.	600.00	200.00	4.80	11.00	815.80	1X	8	46.00	22.00	68.00
						6	9	150.00	90.00	240.00
						4X	10	60.00	200.00	260.00
						23	11	200.00	89.00	289.00
						26	12	850.00	150.00	1,000.00
						8	13	239.00	76.00	315.00
	2,695.00	1,130.00	17.30	33.00	3,875.30			2,755.00	714.50	3,469.50

discernible. The customer also pays handling charges for having the goods placed in the storage area and removed when required. This also applies when extra services, such as cooperage or wrapping are required.

In the crating department, the goods are crated at the request of the customer. Each job is treated as a separate unit and the direct costs are recorded when the work is done. The overhead applicable to any one task will then be a portion of the departmental overhead expenses based on the time consumed.

Selling expenses are recorded in Account No. 57, administration and general expenses. This is the most practical arrangement, since those expenses are readily available with a minimum of bookkeeping.

The overall cost accounting system might be described as one of departmentalization in which the service department expense and the overheads are apportioned to the operating departments on an equitable basis. In order to secure total departmental operating costs from month to month with a minimum of delay, these overheads are "applied" on an estimated basis. The basis of the estimates is the budget, and this system enables the producing departments to bear a nearly correct portion of the annual overheads in each of the monthly accounting periods.

BUDGETS AND FORECASTS

The budget committee consists of employees at the supervisory level, with the general manager acting as chairman. Because the firm is small, there is no budget department as such and it might be assumed that the budgets are entirely on a short term basis. This is not the case, however, and the firm budgets five years in advance.

This budget is admittedly a general one and is rewritten each year to accommodate unforeseen changes occurring in the past year.

Budgeting in the firm encounters some problems not met in manufacturing. There are no easily-established units of production and no distinct components of the business, such as material, direct labor, and manufacturing expenses. This certainly facilitates budget computations but decreases their accuracy.

The budgeting process starts with the sales budget as prepared by the sales manager. The firm places much reliance upon this man. He is a type well suited to estimate future local trends and to "feel the pulse" of the industry generally.

The first budget drawn up by the sales manager is that of the long distance revenue, or the revenue for Account No. 11—Affiliated Furniture Movers' revenue.

It might be advisable to review the operation of the Affiliated Furniture Movers in regard to this firm. All furniture moving jobs extending more than 25 miles beyond the city limits are handled by this group. The firm contracts for such work under the terms and at the rates laid down by the group. These jobs are then registered with and performed upon the instructions of the central office. The "booking" or contracting firm may or may not perform the contracts it has made. It may, by the same token, perform other contracts which it has not made with the customer. Member firms will be remunerated by central office according to the portions of the contract they have performed. Payments by customers are made to the central office, which acts as a revenue clearing house by paying or collecting from the various members on a monthly basis. The revenue earned by this firm is recorded, as shown in the chart of accounts, Exhibit I, in order to provide statistics to the central office when requested.

The budget for A.F.M. revenue is broken down on a monthly basis and shows the approximate areas to which the goods are likely to be hauled. It must be stressed that it is an "educated estimate", since goods are hauled by truck to any town or city within the scope of operations. The sales manager, in drawing up this budget, uses past statistics to a great extent, as well as his knowledge of market conditions.

This budget and the revenue budgets for the other cartage departments go to the supervisors of the departments concerned through the budget committee, where they are discussed in a general way.

It will be noted that these revenue budgets are of the fixed type. They are passed on to the cartage superintendent, who, with the aid of the accountant, prepares flexible budgets of the departmental expense. The budget of A.F.M. revenue shows the budgeted revenue to be derived from long distance moving. However, it is only the hauling, and packing and unpacking revenue which need be considered by the superintendent, since their volume alone will influence the long distance moving department's expense.

One-twelfth of the total yearly hauling and packing revenue is taken as the monthly operating capacity and expenses are budgeted for the range of 70 to 130%. In doing this, the revenue is first computed for these various percentages of operating capacity. The superintendent next reviews the cost records of each vehicle within a department and budgets each type of expense in turn. Thus, in the long distance cartage department, he decides on the direct labor cost of manning all vehicles at 100% of operating capacity and then for the other percentages. The figures for

many of the expenses are made up with the assistance of the chief mechanic, who can estimate the probable repair bill for each vehicle with surprising accuracy. The accountant works with the cartage superintendent in making up the expense budgets and can supply directly the figures for many items such as insurance, depreciation, etc. He can also supply such things as wage schedules and past accounting records. The expense budgets for all the cartage departments are drawn up in much the same way, but cannot be finalized until the other budgets are computed.

In the meantime, the accountant and the warehousing superintendent are drawing up expense budgets for the warehousing departments and for administration and general expenses, in accordance with the warehousing revenue budgets prepared by the sales manager. They also are flexible and follow the general pattern described.

The administration and general expenses are applied to the operating departments in accordance with the revenue earned, whereupon the expense budgets for the warehousing, crating, and general cartage overheads can be closed.

The next stage is to distribute the total of the general overheads account to the three operating cartage accounts. To do this, a comparative factor is used which will charge each vehicle with a portion of the expense according to its comparative size in the fleet.

Upon completion of the expense budgets, they are reviewed by the budget committee. When these have been approved by the group, the accountant is instructed to prepare the budgeted financial statements and cash forecasts. These may in turn lead to a study of the existing capital structure of the firm and a capital budget for the coming year. The budget committee usually ends its annual sessions with a general discussion and a talk by the general manager summarizing the plans for the coming year.

The budgeted monthly figures are compared closely to actual results and all sizeable variances are traced down and reported upon.

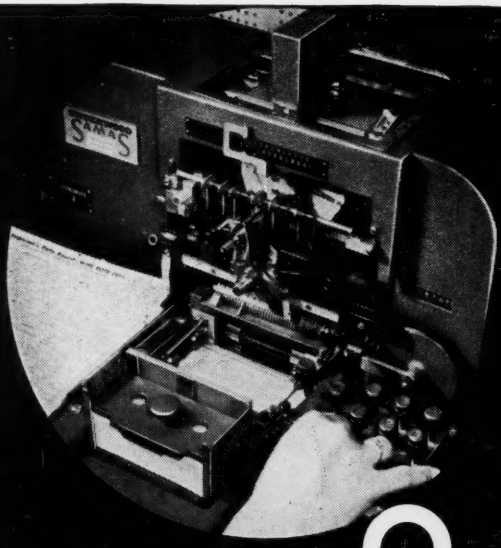
EXPENSE ACCUMULATION—DEPARTMENTAL

The firm can be divided into the following general departments for the accumulation of expense:

(1) Long distance cartage;
(2) Local furniture cartage;
(3) Commercial cartage;
(4) General cartage overheads;
(5) Furniture warehousing;
(6) Commercial warehousing;
(7) Crating;
(8) Administration and general.

Since the first three of these are to be discussed later, nothing more will be said about them here.

The general cartage overheads accounts are used to record those expenses which, while attributable to the cartage function generally, could not easily be charged directly to a particular vehicle. It will be noted that this includes the expense of



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operating the repair and maintenance department. Although parts purchased for vehicle repairs and all labor charges are entered there, the amounts expended on the repair of each vehicle are credited from the truck repairs and supplies journal. This, then, will leave only the overhead cost of operating the repair and maintenance department in the general cartage overheads accounts. Repair parts are purchased only as needed and, since the repair work orders are closed at the end of each month, there should be no balance in the parts account when the month end statements are prepared.

A monthly schedule of fixed charges by departments is used each month. This form is used as the basis of a monthly general journal entry, which charges each department with expenses of a relatively fixed nature. The form has proven valuable as a reminder, since no monthly invoices are received for such items as depreciation, taxes, and insurance. Of course individual schedules are kept for each of these three items on which the monthly accruals are computed as a portion of the annual charge to the firm.

The remaining expenses of all departments are relatively simple to understand. The charges will come mainly from the payroll journal and voucher register and will be charged directly to the departments concerned. It might be noted that the supplies and materials in the warehousing and crating departments are not kept on a perpetual inventory. The quantities kept on hand are small and the items are low in value. The supplies and materials will include such items as rough lumber, nails, excelsior, gummed paper, wrapping paper, etc. These items are all charged to the expense accounts when purchased. The value of the inventory remaining at the end of each month is set up as an asset account. These goods are all kept indoors and any losses which might occur would not warrant a complete system of control.

The management of the firm feels that each department should bear a fair share of the administration and general expenses. Only then can the operations of the departments be compared on a logical basis. Each operating department is, therefore, charged an amount as its share of these general overheads before the monthly closing.

EXPENSE ACCUMULATION—VEHICLES

There are three operating cartage departments and the distinction between them is of a functional nature. The long distance moving department is made up of heavy vehicles of the tractor-trailer type, all manned and equipped in accordance with A.F.M. standards. The second department is made up of vehicles of several sizes, each completely equipped to handle furniture. The commercial cartage department is made up of freight-handling trucks of varying sizes.

Each vehicle is considered a "cost centre" and the cost accounting system has been developed to record accurately the expenses incurred by these cost centres.

A vehicle cost sheet, Exhibit III, is kept for each vehicle, and the direct operating expenses are recorded there on a monthly basis. One of these forms is also used each month to recapitulate the various expenses within each cartage department.

Thus all the expenses recorded in the controlling accounts must be broken down and posted to the subsidiary ledger sheets; i.e., vehicle cost sheets. Many of these charges will come from the voucher register, but the cartage clerk must also post such items as direct labor to the vehicles concerned. Most of the vehicle repairs will

EXHIBIT III

Mileage at Beginning of Month.....
Mileage at End of Period.....
Miles Run.....

VEHICLE COST SHEET

Month.....
Department.....
Vehicle No.....

Date	Description	Direct Labor		Repairs	Gas & Oil	Tires & Tubes	Insurance	Depreciation	Licenses	Vehicle Supplies	Cartage Supplies	Claims	Service Hire	Road Expense	Total
		Hours	Cost												
	TOTALS														

Monthly Recapitulation
Revenue
Expense:
Direct Labor
Repairs
Gas & Oil
Tires & Tubes
Insurance
Depreciation
Licenses
Vehicle Supplies
Cartage Supplies
Claims
Service Hire
Road Expense
Apportioned Expense
Total Expense
Net Revenue
Monthly Cost per Mile
Monthly Cost per Hour
Monthly Overhead Ratio

be handled within the firm and so will be posted to the vehicles from the truck repairs and supplies journal. However, some repair charges will appear through the voucher register, since some road repairs are inevitable.

Vehicle repairs carried out by the repair and maintenance department are executed on the authority of a work order. Parts purchased for such repairs are charged against the appropriate account in the general cartage overhead group, as is all the labor expense used in operating the repair and maintenance department. Upon completion of the work order, it is returned to the office and its details are entered in the truck repairs and supplies journal. The vehicle cost sheets are posted from this journal and the monthly totals of parts and labor shown there are credited to the general cartage overheads accounts.

When goods are issued to the vehicles, the drivers sign a gasoline stores requisition or a stores requisition. Copies of these numbered forms are sent to the office, where they are totalled daily and entered in the truck repairs and supplies journal. The individual requisitions are used to enter the expenses on the vehicle cost sheets.

In addition to these expenses, there are some which must be entered monthly, although they may have been billed to the firm on an annual basis. A convenient means of handling these expenses is to set up a card file on which the fixed monthly charges for each vehicle are listed on individual cards. The file is used to make up a monthly general journal entry, and the vehicle cost sheets are posted from the individual cards.

The foregoing has dealt only with the expense accumulation for vehicles based at the home office. However, the vehicles of the long distance cartage department will be out of the home city for at least half of each year. The routine for expense accumulation during these trips will vary somewhat from that just described.

When ordered to go on a trip, the driver is given an advance of cash or a cheque to cover his expected expenses. He will discuss the route with the cartage superintendent and will be told to call at the office of each A.F.M. member along his way. There, he can obtain any ordinary financial or physical help needed. He will wire a progress report to his home office each morning.

The driver will purchase his gasoline by credit card. The advance he has been given will pay his living and incidental expenses. He is instructed to obtain receipts for all expenditures. His expenditures, activities, and progress are recorded each day on a van operator's report.

The expenses and all financial details of the trip are summarized in the trip journal. This journal, besides breaking down the expenditures of each trip for posting to the ledgers and vehicle cost sheets, assists in the handling of advances. The office must watch these advances rather closely, since it is quite possible for a driver to be sent on a second trip during a busy season before previous advances have been cleared.

When a trip is going to extend beyond the end of a month, the driver is instructed to mail that month's van operator's reports, with the supporting vouchers, to the home office. This is, of course, to assist in the completion of the monthly records.

THE SERVICE DEPARTMENT AND MATERIAL CONTROL

Despite the seeming irregularity in discussing the service department and material control separately, they are very closely related in this firm.

The only true service department is the repair and maintenance department, which services all vehicles of the three operating cartage departments. In addition, the same department supplies the vehicles with gasoline and oil, miscellaneous vehicle supplies, and materials used in the various hauling jobs.

The repair and maintenance department is staffed by three men: A master mechanic; a mechanic; and a storeman.

Work on any vehicle originates with a vehicle work order. This may be written by the master mechanic or the cartage superintendent, but is signed by the latter. No attempt is made to store repair parts, since these may be purchased locally with a minimum of delay. Purchase orders are written for all purchases and are signed by the cartage superintendent or general manager. These are simple, numbered forms, which are written in duplicate.

All vehicle work orders are closed at completion of the work or at the end of each month. In the latter case, a new work order is written on the following day for the remaining portion of the work. This month end closing of vehicle work orders enables the truck repairs and supplies journal to record the repair expense in the month in which it is incurred.

The storeman issues supplies to the various vehicles upon the authority of the driver's signature on a stores requisition. Gasoline is issued on the authority of a gasoline stores requisition bearing the driver's signature.

Gasoline and oil supplies are kept on a perpetual inventory. The quantity purchased then serves as a check on the amount removed since the previous filling. The actual quantity on hand is checked once a month by the storeman and cartage clerk, by means of a "dip stick."

PAYROLL AND EMPLOYEE RECORDS

> *"In all of the industry of storage and warehousing and all its branches one is amazed at the great importance of the cost of wages. Obviously, this is because we are a straight service organization and largely make our money by the sale of the services of people whom we have organized and trained to give a certain type of assistance to the public."*[2]

It has not been found necessary to use job time tickets in this firm. Instead, weekly time cards are kept, and the workers enter the history of their activities at the close of each day.

The cartage employees use cartage time cards and the cartage superintendent advises on their completion. The following day, the cartage clerk checks each card against the cartage orders. It will be remembered that the completed copies of these forms show the workers' names and the time spent on each job. The cartage clerk, of course, makes no changes but directs his queries to the cartage superintendent.

Employees of the warehousing and crating departments use a warehousing and crating time card. Since they are fewer and their activities are localized, their superintendents have little difficulty in supervising the completion of their time cards.

In order to charge the cost of labor to the various departments, a payroll distribu-

(2) C. F. Basil Tippet, The Use and Benefit of Cost Accounting in Warehousing; Canadian Warehousemen's Association Lecture, November 4, 1952, p. 15.

tion sheet is kept on a monthly basis. A general journal entry is made up each month end from the payroll distribution sheet which summarizes labor costs in the various departments and provides the credit to clear the payroll account.

The weekly payroll is entered on this distribution sheet as it is finalized. The departmental charges and the labor hours of the various departments are recorded thereon. The direct labor for the cartage departments will be recorded on the vehicle cost sheets by the cartage clerk through the cartage time cards. The totals of the wages and the hours which he records on these sheets must agree with the totals shown in the payroll distribution sheet.

At the end of each month, the payroll distribution sheet is completed to record the details of labor costs for the full month. Since the months do not ordinarily end exactly when the pay periods do, it is necessary to record the incomplete pay on the distribution sheet of the month concerned.

Another interesting point in the payroll system is that the cartage superintendent instructs the payroll clerk to draw a cheque for each driver who is on a hauling trip and is therefore unable to present his time card. These cheques are made to cover the minimum work week, but they provide the workers with at least part of their wages immediately upon their return.

EXPENSE DISTRIBUTION—DEPARTMENTAL

Under *Budgets and Forecasts,* it was stated that the administration and general expenses were apportioned on the basis of revenue. To elaborate somewhat, budgeted figures for the annual revenue and the annual administration and general expenses are first obtained. The ratio of each operating department's budgeted revenue to the total is then computed. These percentages are used to distribute the budgeted administration and general expenses on the monthly statement of profit and loss.

It might be argued that a better system of dividing the administration and general expenses would be to calculate a new percentage relationship each month. However, to do so would be to ignore the work done in the budgets. Furthermore, while the results might appear to be accurate on the individual monthly statements, the yearly total charged to each department would prove them inaccurate. The main reason for this would be the difficulty in getting an exact monthly A.F.M. revenue figure, since an A.F.M. member's portion of revenue cannot be precisely reckoned until the jobs are completed. For these reasons then the ratios developed in the monthly budget are used. This will give the desired annual apportionment of administration and general expenses.

In the system under discussion, the month's actual revenue is first found. Then the budgeted administration and general expenses for that level of activity are "applied" to the various operating departments. The variances between the actual and budgeted administration and general expenses are thus recorded.

The wisdom of dividing these expenses according to the revenue earned is questionable. Several of the administration and general expenses could be divided quite accurately if additional effort were used. There is no means, however, of accurately dividing many of the others. It is felt, therefore, that the labor expenditure in breaking down a few accounts would not be warranted in the overall increase in accuracy.

EXPENSE DISTRIBUTION—VEHICLES

At the present stage, each functional division of the warehousing and transfer firm is charged with its own expense, and a portion of the administration and general expenses. The result may be likened to the cartage, furniture warehousing, commercial warehousing, and crating departments, each operating as separate businesses.

However, each of the three cartage operating departments has only been charged with its direct costs. Each department, in fact each vehicle within each department, must be charged with a portion of the indirect expenses. It will be remembered that such expenses have been charged against the general cartage overheads account. These expenses must now be distributed among all the vehicles of the fleet.

The task presents a rather difficult problem. The general cartage overheads accounts contain the overhead costs of operating the revenue-producing cartage departments, a portion of the firm's overheads, and the overhead costs of operating the repair and maintenance department. Thus, each vehicle must be charged with some of the general cartage overheads whether it is in operation or being repaired during the accounting period.

The method decided upon for this firm is rather unorthodox but has a great deal to recommend it. This method consists simply of distributing the general cartage overheads in accordance with a weighting factor. This, of course, will apply the overheads, regardless of whether or not the vehicle is operating. A vehicle which is being repaired should certainly bear less of many of the overhead expenses, such as advertising, than one which is "on the road." However, such a vehicle should certainly be charged with more of the repair and maintenance department overhead while it is being repaired. The work order handling the repairs on that vehicle will only charge it with the cost of the repair parts and the mechanics' actual working time. The weighting factor, then, is very simple to use, yet provides results as accurate as any other method, with the possible exception of a complicated formula.

Upon the completion of this distribution, the vehicle cost sheets will show the costs of operating each vehicle for the month. A total taken of the vehicle cost sheets of all the vehicles in a cartage department will show the total charges for that department and will agree with the general ledger.

These figures will provide the statistics and operating histories of the various vehicles. However, they are definitely historical. They do not provide management with an easily-read computation of costs of doing a specific job in the future. To do this, the figures on the vehicle cost sheets must be shown in their unitary relationships rather than in actual values.

In accounting for manufacturing, unit costs can be be broken down into material direct labor and manufacturing, so that the cost of producing a unit of product within a whole factory can be estimated. Such estimates are much more difficult in a cartage enterprise where the component costs vary from day to day, from mile to mile, from load to load, and even from vehicle to vehicle. However, it is possible to provide a formula with which to estimate the cost of doing a specific job with a specific vehicle.

Where the manufacturing accountant speaks of variable and fixed costs, the cartage accountant can speak of distance and time costs. Neither of them can point out

a clear-cut division, yet it is definite enough to prove useful.

A glance at the headings on the vehicle cost sheet will show that some charges are unaffected by the miles the vehicle travels or the number of hours it is operated. These may be called the overheads and, in this study, would consist of apportioned charges, insurance, depreciation, and licenses. Of the remainder, direct labor and road expenses (viz., hotel expenses, meals, etc.) are governed entirely by hours of operation. The remaining expenses are governed entirely, or in large part, by the miles travelled. By dividing the distance expenses by the distance travelled and the time expenses by the direct labor hours, a cost per mile figure and a cost per hour figure can be obtained. The overhead expenses can be computed as a percentage of the total of the time and distance expenses. By using these relationships, the maze of historical data is reduced to fundamentals for future costing. In this way the break even point for sending a particular vehicle a known number of miles during a known period of time can be safely estimated.

Such a cost formula is not a standard cost in the same sense as are the results of time and motion studies in a manufacturing industry. It can be used, however, for much the same purposes and, over a period of several months or a year, can create a kind of "standard of performance" which has proven invaluable for management control.

SUMMARY AND MONTHLY REPORTS

The value of financial reports often varies with the length of time taken to produce them and, in this firm, every effort is made to have them prepared as quickly as possible.

As discussed earlier, the revenue earned by the company for its part in work done on behalf of the Affiliated Furniture Movers is not usually claimed until the work has been "abstracted" by the central office. Instead, the cash or charges are credited to a clearing account, pending receipt of the abstract covering the moving job. Therefore, at the end of an accounting period the amounts in that clearing account must be analyzed, and the amount forthcoming to the company must be set up as revenue, and the remainder recorded as a liability. To minimize clerical work, this entry is reversed at the beginning of the new period, even though the estimates of this revenue will prove quite accurate.

The expenses of those vehicles "on the road" at the end of an accounting period do not present much difficulty. All drivers are instructed to mail their expense vouchers on the first day of each month. By reviewing the outstanding advances in the trip journal, all vehicles can be accounted for at the closing date.

The monthly statements are comparatively simple to produce. A profit and loss statement is drawn up for each department. The present period is first of all compared to the same period of the last year. In still another column, the expenses are shown as percentages of the department's revenue. These ratio statistics are closely watched by management and have certainly proved advantageous for comparative purposes. In recent years, the whole industry has used ratios to an increasing degree and it is now possible for a firm to obtain the operating ratios of the leading firms in the industry.

The departmental profit and loss statements are also the forms on which the

actual monthly figures are compared with those budgeted, and the variances studied. Only the more significant of these variances are analyzed unless more detail is requested by management.

The operating results for all departments are shown on the firm's condensed statement of profit and loss. The present results are compared with those of the past year. The amount by which the administration and general expenses have been over- or under-applied to operations is adjusted by being added or subtracted from the results of the firm's operations.

At the end of the accounting period also, reports are made up which condense the findings of the vehicle cost sheets. A vehicle cost statistics report (Exhibit IV) is made up for each of the cartage departments. This report determines the profit and profit ratio of each vehicle in the department. The unit costs of operation of each vehicle are shown on the same report.

The profit ratio for each of the cartage departments is considered a significant ratio in the industry. It is simply the percentage which the net profit bears to the revenue.

L. W. Mason, in his book, *Local Trucking*,[3] treats the subject as follows:

> *"Do not compare vehicle groups by comparing the costs per vehicle-hour, or the costs per vehicle-mile, or the total effective costs per vehicle-hour. Compare instead the profit ratios, the relative efficiency of the several groups in creating the most cents of profit out of each dollar of revenue."*

EXHIBIT IV

VEHICLE COST STATISTICS

LONG DISTANCE CARTAGE DEPARTMENT for Month of....., 19....

Vehicle No.	Miles	Earnings	Expense for Period	Net Profit for Period	Profit Ratio	Costs this Period			Average Monthly this Year		
						Per Mile	Per Hour	Overhead Ratio	Per Mile	Per Hour	Overhead Ratio
TOTALS											

(3) L. W. Mason, Local Trucking, (New York; Toronto; London; McGraw-Hill Book Company, Inc., 1951), p. 277.

This advice would help the firm to plot future cartage activities by pointing out the relative importance of each branch of operations.

As to the individual vehicles, it is the unit operating costs; i.e., per mile, per hour, and overhead ratio which are most important. The report on vehicle cost statistics will point out the relative efficiency of each unit within each department.

Little has been written about the accounting reports of the warehousing and crating portion of the firm's operations. The profit and loss statement for each of the two warehousing and the one crating department will give the overall cost of operating them. The warehousing superintendent is required to turn in a weekly report on "unoccupied warehousing facilities" in order to keep the sales department informed of space available. Such reports are particularly important in commercial warehousing, where space must often be kept available for the largest clients, while low revenue rates make it necessary to operate the warehouses at as high a capacity as possible.

The accounting system for the warehousing and crating departments operates more as a cost finding system than a true cost accounting system. Complete departmentalization provides the operating costs of each of these departments, but the records do not show the cost of storing or crating any one lot of goods. However, since the total area of the warehouses is known, the cost of storing any lot occupying a known space is readily ascertainable.

One of the most likely causes of variation in the monthly "expense per cubic foot" will be the degree of occupancy of the warehouses. In order that the correct weight be given to such changes in the expense rate, an average degree of occupancy is set at 80% of the total space. This may be called a standard for the firm, and its storage rates are set at a point to consider the expense as being at that level.

The crating department is the least active of the operating departments. Since the monthly profit and loss statements show the results of operations by months, and a docket or file shows the material and labor cost of each job done, little difficulty is encountered.

THE ACCOUNTING SYSTEM AND MANAGERIAL CONTROL

In the warehousing and transfer industry, probably the greatest problem in management control is that of supervising the motor vehicles. The industry rotates around motor vehicles and these, by virtue of their work, are often beyond the scope of direct supervision. Still another factor in the management of motor vehicles is the necessity of determining the success or failure of operating the firm in conjunction with one of the trans-continental trucking firms.

This study has endeavoured to show the value of tracing costs of operating transport concerns directly to the vehicles involved. The amount of clerical work involved in so doing is relatively small and the value of the system's findings can be enormous. It certainly will assist management in deciding upon the relative merits of various types of trucks, tires, and fuels. It will enable it to decide whether or not to curtail operations during poor road conditions, and to determine the adequacy of rates.

The problems of cost accounting in the warehousing section of the firm are different from those of the cartage industry and are probably not so complicated. The system of accounting outlined enables management to watch constantly the profits

and expense ratios in either of the two warehouses. Such a system seems adequate for the operating of a furniture warehouse where all rates are charged on a "space occupied" basis and where one lot of furniture is much like any other, except for size.

The control over commercial warehousing may present more of a management problem. In this portion of the industry, goods are often stored on a "unit charge" basis. The unit may be of any size and type which the warehousing agent will handle. For the quotations of such rates, the cost accounting system provides management with up-to-date costs of operation. It will show how high monthly revenue must be maintained in order to meet expenses. However, it will not show directly how much of the commercial warehousing expenses are caused by any one type of commodity. If such figures are needed to substantiate the fears or estimates of management, the present system can be used as a cost finding system. Requisitions and time cards would be notated whenever any expense was made on the sections of the warehouse containing the doubtful articles. The costs so determined, although historical, would help establish more equitable future rates for that type of article.

The crating department studied brings in a very small portion of the firm's revenue. It represents a potential danger to management since it is likely to be a necessity in this type of industry, while the volume of work available will vary a great deal. This uncertainty makes it necessary to operate the department in conjunction with the furniture warehousing department, which can assist it in maintaining an adequate labor supply. Management's task in controlling this department will be that of a watchdog, and the cost accounting system provides adequate detail in return for a minimum of expense in clerical labor.

For further reading

METHOD OF OPERATING FLEETS, Thomas Burgess, Jr., New York Certified Public Accountant, June 1956.

HOUSEHOLD GOODS WAREHOUSING—Study of 1956 Operation National Furniture Warehousemen's Association, Chicago.

ORGANIZATION OF THE TRAFFIC AND WAREHOUSING FUNCTION, by C. H. Vescelius, A.M.A. Manufacturing Series #220.

PERSONALS

C. S. ROWE, R.I.A., has joined Preston-Noelting Limited, Stratford, Ontario as Industrial Accountant. Mr. Rowe was formerly with Hill-Clark-Francis Limited, New Liskeard.

VLADIMIR SUCHARDA, ING. COM., R.I.A., has been appointed Assistant Controller of Robertson-Irwin Limited, Hamilton. Mr. Sucharda was formerly General Accountant with the company.

E. R. PERKIN, F.C.I.S., R.I.A., formerly Treasurer of Purolator Products (Canada) Limited in Toronto, has been appointed Executive Vice-President of his company.

J. C. GREEN, R.I.A., one of the first graduates of the New Brunswick Society's lecture courses, has been appointed Depot Manager in charge of Parts Operation, Ford Motor Company of Canada Limited, Saint John. Mr. Green joined Ford in 1946 in the stock room.

LOOKING AHEAD

The older members of society appear to be gaining a larger share of the spotlight. Because of the increase in life expectancy, the percentage of people in the upper age groups is increasing. This tends to increase government welfare costs and legislators seem interested in the welfare of the senior citizens.

A good example of concern for the aged is the protest by the American committee investigating drug prices. They claim that the aged are being deprived of medical care because of high prices. Mandatory industrial retirement policies are also under review and it would be a likely prediction that an anti-age discriminatory law will be the outcome.

The sponsorship of a better deal for the aged, tied in with changes in government welfare plans, will likely be strong points in forthcoming elections both in the U.S. and Canada. It is estimated that more than 20% of the eligible voters are 60 or older, and this well-organized group with a common concern can be very effective in elections. (*Bus. Week, Dec. 19, 1959*)

Research spending in the U.S. is increasing at a tremendous rate. It has proved to be a profitable activity in that an estimated 15% of all 1960 sales in the chemical, electrical, machinery and transport industries, will be new products.

In 1959-60 it is estimated that $12.43 billion will be spent on research. This is almost 2½ times the amount spent in 1953-54. By 1969 the figure is expected to reach $28 billion.

It is interesting to compare where the money comes from and who spends it. Here are two estimates for the 1959-60 period and for the year 1969:

	1959-60 Billions of $		1969	
	Contributes	Spends	Contributes	Spends
Federal	7.70	1.78	11.00	3.06
Industry	4.43	9.40	16.40	21.24
Colleges	.20	1.00	.45	2.90
Non-Profit	.10	.25	.15	.80
	12.43	12.43	28.00	28.00

These estimates illustrate a shift from 60% contribution by government at present to about 40% in ten years time. At the same time, industry is expected to boost its contribution from less than 40% to about 60%. There is also a trend to greater spending by colleges, with part of the cost being picked up by industry. These of

course are estimates and actual figures could be quite different depending upon the economic climate. (*Bus. Week, Dec. 26, 1959*)

Metal from oil water may be an important new by-product of the oil industry. It has been found in the Alberta Oil Fields that water formations at the bottoms of wells have high concentrations of products such as magnesium, bromine and iodine.

Magnesium and bromine are produced mostly from seawater in the U.S., but concentration in the wells is many times greater than that found in the seawater. Commercial extraction of these elements in Canada looks promising. (*Fin. Post, Dec. 26, 1959*)

ON THE PERSONAL SIDE

A comparison between the beginning of the century and today shows some startling changes in the working man's life, and in the national growth:

> Pay in manufacturing industries has risen from 14¢ to $1.70 (in "real" terms 170% increase) per hour, and the 60-hour week has been replaced by the 40-hour standard.
>
> This pay increase does not include the many fringe benefits which did not exist when this century began. These fringes include paid vacations, hospital and medical plans, pension plans, and a variety of other benefits that are peculiar to different industries.
>
> In addition to the industrial improvements, the working man has added security in the form of government-sponsored hospital plans, workmen's compensation and old age pensions.
>
> Per capita production has risen almost ten times; consumer spending has risen by eight times; discounting price increases, the increase in real goods is 170%; government spending has increased 25 times. (*Fin. Post, Dec. 26, 1959*)

The trend to early marriages has increased from 8% in 1941 to over 15% in 1958 for males, and from less than 22% to almost 34% for females in the same time period. The age group covered is from 15 to 24 years. (*DBS, Dec. 24, 1959*)

Airlines are exploiting every means to increase passenger comfort and thus help to fill available capacities. At present the number of seats available outruns the travel demand. Many of the smaller lines are subsidized by governments in order to keep them competitive with the larger companies. The International Air Transport Association which represents nearly all the lines has been having trouble with internal feuding on fares and services. In order to meet competition, many of the smaller companies are engaging in pools and mergers. However, experts predict stormy weather ahead in the form of a possible price war with increased competition for the world travel market that so far is too small to support all the airlines in operation. (*Bus. Week, Jan. 2, 1960*)

OF GENERAL INTEREST

Air transport in Canada seems to be making significant inroads on rail movement. In 1958 train miles travelled declined by more than ten million (8.7%) of the 1957 freight and passenger service. In the first half of 1959, 2,533,000 pounds of mail were transported by air in Canada. This is an increase of over 8% for a comparable period in 1958. In comparing the same two half years, there was an increase of over 16% in the number of people travelling by air. (*DBS, Dec. 11, 1959*)

MANAGEMENT ACCOUNTING COMES TO INDIA

By George Moller,
Treasurer and Director,
Robertson-Irwin Limited,
Hamilton, Ontario.

This article reviews the *Report on Management Accounting* by S. Prakash Chopra, S. N. Desai, and E. V. Srinivasan, members of the Indian Management Accounting Team of the Institute of Chartered Accountants of India. Published by Super Press, Paharganj, New Delhi, the report is the result of a study tour of the U.S. and Canada undertaken by the team from September 30 to November 10, 1957 under the sponsorship of the Ford Foundation.

UNDER the heading of "Management Accounting", the team making this report tried to cover more than is properly included in the area of managerial accountancy. The report comprises more than 200 pages, of which about 40 are appendices. In the text itself are many graphs, charts and schedules, some covering items which would be considered here as falling into the fundamental and advanced cost accounting field. Not less than ten pages in the text are devoted to the presentation of a seven-digit code chart of accounts.

In the introductory chapter, the three members of the team give an account of their research tour, whom they visited and with whom they conferred. They quote their main objectives as:

(i) To study the methods in management accounting in some typical American firms;

(ii) To study the practice of managerial services wings in professional firms of accountants;

(iii) To study systems of education and training in accountancy in relation to (i) above;

(iv) To obtain references to available literature on the subject of management accounting; and

(v) To secure suggestions from appropriate sources in regard to the syllabus for study for the post graduate course in management accountancy and in regard to organizing, training and education of students registered for the post graduate course.

A Registered Member of the Society and a Chartered Accountant, Dr. Moller is a frequent contributor to *Cost and Management*. Following studies in law and political science, he received the degree D. Juris from the University of Prague and was for some time Secretary to the management of the Bohemian Union Bank. After coming to Canada in 1939, he joined the firm of George A. Touche and Company and later Robertson-Irwin Limited in Hamilton. Appointed in 1958 to the Vice-Presidency of H. H. Robertson Co. Limited, the holding company of Robertson-Irwin Limited and Robertsteel (Canada) Limited, he is an officer and director of each of the three companies.

The gentlemen spent three days in Canada, had discussions with two chartered accountant firms, the Imperial Oil Company, Ford of Canada, and the Steel Company of Canada in Hamilton; furthermore, with representatives of the Institute of Chartered Accountants of Ontario in Toronto, and representatives of the Society of Industrial and Cost Accountants of Canada in Hamilton.

This publication, described by the authors as "the beginning of a beginning"—for India—can best be characterized as a brief but thorough introduction to the elements of management accounting. The team was obviously conscious of the need to include some rather elementary observations to enable the average reader to follow through to the more advanced conclusions. Unavoidable, no doubt, is the extensive dealing with management problems, to which a full chapter—"Structure of Management"—is devoted. Somewhere in the text, one would have welcomed the mention of at least one basic text on management, such as Drucker's *The Practice of Management.*

Several chapters contain information on systems and procedures. One chapter is devoted to data processing and mechanized acounting data processing, and one even to operations research.

The first section of Chapter 17, "The Controller and Controllership Function", reads: "Management accountancy and controllership functions are almost synonymous." It is interesting to note how others see us: "The controllership function embraces all accountancy functions including advice to the management on the courses of action to be taken in given circumstances. There is no precise definition of controllership function. The functions of a controller are dependent on the agreement between him and the company or organization." The latter sentence could be hotly debated if we were not so conscious of the lack of a uniformly-accepted terminology in our field of endeavour. The definition of the functions of a controller should not require an agreement with the incumbent, but rather the setting out by top management, which hires the controller, of what is expected from the incumbent and his implicit undertaking to fulfill the requirements under penalty of dismissal on failure. Most of the information in this chapter is based on the publications of the Controllers Institute of America, from which the report quotes extensively on the responsibilities and duties of the controller. The report describes the Institute in detail, giving even the requirements for eligibility and a number of statistics on the Institute and Controllership Foundation. Not less than five organization charts, showing the controller's organization, are appended to this chapter.

Chapters 21 to 24 deal with accountancy education, giving a concise but informative description of the opportunities for education and training in U.S.A. and Canada. It is very satisfactory to see that a whole chapter is devoted to the Institute of Chartered Accountants of Canada and the Society of Industrial and Cost Accountants. The report states that our Society "has been formed for the purpose of training personnel on the subject of industrial accounting. The industrial accountant is concerned with the internal economy of a business. His services are also utilized by commercial and financial houses, public institutions and the government. The industrial accountant has come to be recognized as an indispensable factor in scientific management." The requirements for the R.I.A. designation and the details of the four-year study program are quoted. It is interesting to read in this chapter about

our Society's executive development course: "It is not intended to create specialists but the participants are encouraged to think along managerial lines and to round off their appreciation of the wide range of business problems." We can only hope that this is a correct preview of the future of this branch of our Society's endeavour.

In the last chapters, the team tries to develop a proper approach to applying the results of this research in India. It says here that "the idea (of management accounting) has, in fact, to be sold to the managements." How true, even here!

The team describes, step by step, what, in their opinion must be done to build a management accounting organization. This includes selling the idea to management, finding a suitable expert for the installation (perhaps using specialists—management consultants), preparing a considered and co-ordinated plan of action with delegation of responsibility and authority, and finally, attacking the problem from four different directions—"Finance and accounts, statistics and economics, production planning and engineering, and systems and procedures in management." The report continues, "It is advisable that the concept of 'promise and performance' should be introduced in an extremely simple way. The person responsible for performance should offer some sort of a promise in regard to what he is likely to achieve so that his actual performance could be judged in relation thereto."

In Chapter 26, the team speaks about the development of management accounting knowledge and pleads emphatically for a more effective role of the Institute of Chartered Accountants of India in the study and furtherance of the subject, in co-operation with commercial and industrial associations and chambers, other accountancy bodies, and professional associations such as the Association of Production Engineers, the National Productivity Council, etc.

One suggestion to chartered accountant firms in India is that they consider the feasibility of having managerial services wings in ther offces, starting initially with cost accounting or operational accounting advisory wings. The report states, "We feel that chartered accountants must actively associate themselves with planning and production for the future. This could be achieved if they rendered effective advice on planning and operating production in industry."

Some of the material reproduced in the report is not the best available perhaps, but in the short time at the disposal of the team, this had to be expected; in particular, the bibliography (Appendix "D") seems rather sketchy and will, of course, very soon be dated.

One would expect to find I. Wayne Keller's *Management Accounting for Profit Control* in this list, particularly since the title was mentioned in the text. Longman and Schiff's *Practical Distribution Cost Analysis* would be a competent text on this specific field of managerial accountancy. Since the report was written, the Controllership Foundation has published their *Business Budgeting*, the survey of management planning and control practices. Harold Bierman's new book *Managerial Accounting—An Introduction* would form an excellent addition to the required reading list. It might have been useful had the team undertaken to reproduce a collection of selected articles on special fields of management accounting, such as the measurement of management performance. The management accountant will certainly require more than just one paragraph on "Return on Capital Employed." The bibliography quotes under No. 40—"Series of articles on different subjects written by

a number of persons interviewed." It might have been helpful had these articles been listed. However, this constructive criticism should in no way detract from the great value of this survey of management accounting. The survey will certainly be a big help in introducing this tool of efficient management to India—a tool which even in this country is still far from general acceptance and application.

It is gratifying to see that the team expects "that over the time on the basis of the information received and knowledge gathered from the Society of Industrial and Cost Accountants, Canada, and La Salle Extension University, Chicago, some better arrangements (for a post graduate course in management accountancy) might become possible." No other source of information is mentioned in this connection.

On matters relating to government affairs and accounts—audit in particular—the team did not reach unanimity.

It is only fair to close this review of an unusual report by reproducing the last paragraph, with which this reviewer wholeheartedly agrees:

"To sum up, our recommendation is: we should learn, apply and develop the different principles of management accountancy to real life in a practical way. This is the crying need for the betterment of the society in general and of the economic needs and standard of living in particular."

For further reading

THE EVOLUTION AND PRESENT STATUS OF MANAGERIAL ACCOUNTING, by L. J. Benninger, Cost and Management, July-August 1959.

NOTICE OF EXAMINATION DATES

The dates for the 1960 examinations have been set as follows:

Accounting I	Monday, April 25th
Industrial Legislation	Monday, May 2nd
Accounting II	Tuesday, April 26th
Industrial Organization and Management	Tuesday, May 3rd
Fundamentals of Cost Accounting	Wednesday, April 27th
Accounting III	Wednesday, May 4th
Report Writing	Wednesday, May 4th
Advanced Cost Accounting	
Paper I	Thursday, April 28th
Paper II	Thursday, May 5th
Managerial Statistics	Monday, May 9th

For time and place of the examinations, please consult your Provincial Society.

Books in Review...

STATISTICS FOR BUSINESS DECISIONS

By Kurnow, Glasser, and Ottman, Richard D. Irwin Inc., Homewood, Ill. xi 523 pp. Reviewed by C. G. Edge, R.I.A.

There have been many books published in recent years on statistical methods, but this one is different. Instead of demonstrating statistical methods per se, it concentrates on illustrating how statistics can be used to solve practical business problems. Emphasis is placed on how to take action on the basis of data rather than compiling data as an end in itself.

The central theme of the book is how to plan and execute studies using sampling techniques. A brief review of the contents follows. In the first part, Chapter 1 identifies the problem, Chapters 2 and 3 show how to define the problem in statistical terms, and Chapter 4 follows on alternative methods of collecting data. Chapters 5 through 8 indicate how to formulate plans for sample studies. Chapter 9 warns about the limitations of the data and Chapter 10 indicates how to collect the data.

The four chapters in the second part of the book review special topics, such as control charts, comparative experiments, correlation and regression, and forecasting with time series.

The book does not fully cover all aspects of the syllabus for "Managerial Statistics" for the R.I.A. degree since, for example, charts and presentation of data for senior management are excluded. On the other hand, it does provide the industrial accountant with an insight into the use of statistical methods in other parts of the business. This may stimulate the application of these techniques in the accounting field.

To summarize, the book develops a critical appreciation of the meaning of figures, of the limitations of their accuracy and of the strength of the conclusions that can be drawn from them and, thereby, how statistical techniques can help solve business problems. The approach is non-mathematical and the book is comprehensive and readily understandable. The authors are to be congratulated on providing an excellent medium for "getting acquainted" with this important business subject.

The Editor's Choice

RETURN ON CAPITAL AS A GUIDE TO MANAGERIAL DECISIONS

N.A.A. Research Report No. 35

This report is developed by dividing the measurement of return on capital into two categories. First, it examines the rate of return on capital as a device for measuring the performance in a certain period of operation. Secondly, it looks at the worth of this yardstick as a means of measuring anticipated returns in capital budgeting. The report concludes that with certain refinements this technique is a useful and reliable guide for making many decisions.

1700 TOP EXECUTIVES

Fortune, Nov. 1959

In this interesting report, *Fortune* gives a complete picture of the average top American executive. The sampling covered 834 companies. In addition to the general picture, there is a breakdown between different industries with some revealing details in personalities and pay cheques.

CAN CAPITALISM WIN THE INTELLECTUALS?

C. B. Hoover, Harvard Business Review, Sept.-Oct. 1959

The author raises a very timely and important question: "Why the passivity and sometimes outright hostility of intellectuals to modern American capitalism?" He believes that the freedom of thought offered by the system gives scope for more uninformed critics who turn the public against the system. At the same time, there has been no real cause for a particular group to champion the system. He develops his argument by saying that under our system personal and public interests sometimes conflict, and, those who are liberal in view tend toward socialism. The long term effects of this situation could be a drastic change in the Capitalist system.

CHALLENGES TO THE ACCOUNTING PROFESSION IN THE U.S.

C. G. Blough, Journal of Accountancy, Dec. 1959

The author gives a brief sketch of principles and goes on to outline 18 areas where there is divergence of opinion and need of clarification. These questions are generally applicable to the profession and should be pertinent for accountants in most any country. A good reminder that there is still much to be done.

THE BUSINESS MAN IN POLITICS

American Management Association Report No. 37

This report is divided into three parts. The first part is called "The Business Man in Politics"; part two is headed "Some Challenges of Top Management", and the report ends with "Some Tools of Top Management." There are 15 articles written by well-known business and political leaders. The discussion centres around the role and extent of the business man's participation in politics, points up some new challenges to top management, and suggests some tools and methods to aid the executive in his challenging task.

BUSINESS EXPERIENCE WITH ELECTRONIC COMPUTERS

Controllers Institute Research Foundation

This report was written by Directors, Management Advisory Services of Price Waterhouse and Company. In the past, this Foundation has issued several publications on the application of electronics to business, with more emphasis being placed on introducing computers, installing them, and making use of them. This new book "is published in order to present a synthesis of what has been learned from electronic data processing installations." The experience of many large firms that have pioneered the use of computers is arranged and presented in such a manner that it should be valuable reading for anyone interested in this field.

Books Added to Library...

Title	*Author*	*Publisher*
Business Report Writing	Hay and Lesikar	Richard D. Irwin, Inc.
Business Reports—Investigation and Presentation	Anderson, Saunders and Weeks	McGraw-Hill Book Company, Inc.
Cases in Controllership	Hassler and Harlan	Prentice-Hall, Inc.
CPA Problems and Approaches to solutions	Horngren and Leer	Prentice-Hall, Inc.
College Accounting (5th Ed.) Three Volumes	Sherwood, Boling and Carson	South-Western Publishing Co.
Common Sense in Letter Writing	Butterfield	Interstate Printers and Publishers, Inc.
Citadel, Market and Altar	Heath	Science of Society Foundation
Cost Accounting (5th Ed.)	Neuner	Richard D. Irwin, Inc.
Cost Accounting (2nd Ed.)	Schlatter and Schlatter	John Wiley & Sons, Inc.
Cost Accounting and Control	Gillespie	Prentice-Hall, Inc.
Critical Thinking (2nd Ed.)	Black	Prentice-Hall, Inc.
A Dictionary for Accountants (2nd Ed.)	Kohler	Prentice-Hall, Inc.
Economics of Labor Relations (3rd Ed.)	Bloom and Northrup	Richard D. Irwin, Inc.
Effective Business Report Writing	Brown	Prentice-Hall, Inc.
Effective Communication—A Guide to Reading, Writing, Speaking and Listening	Dean	Prentice-Hall, Inc.
Effective Letters in Business (2nd Ed.)	Shurter	McGraw-Hill Book Company, Inc.
Effective Management Through Probability Controls / How to Calculate Managerial Risks	Mueller	Funk & Wagnall
Essentials of Accounting (3rd Ed.)	Paton and Dixon	Brett-Macmillan Ltd.
Fluctuations,Growth and Forecasting—The Principles of Dynamic Business Economics	Maisel	John Wiley & Sons, Inc.
Fundamental Accounting Principles	Pyle and White	Richard D. Irwin, Inc.

3

Cost and Management

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Editorial Comment . . .

Terminology and Accounting Education

IN RECENT YEARS, the increased emphasis on control aspects in the daily operation of business has caused an evolution and elevation of cost accounting. Like many branches of study for which a need is evident, cost accounting has grown fast. At times the new terminology is confusing, the course outlines difficult to circumscribe, and the approach to the study not too clear because of the various objectives desired and the wide variance in the groups attempting the study.

In the January 1960 issue of *The Accounting Review*, Professor Jacobsen of Stamford University has done an excellent job of defining the area of cost accounting and classifying the content and approach of the study.

First, he covers the course content and states that the adage "the choice of accounting data depends on the use to which they are put" is also true of accounting course content. The role that accounting plays in the business world is divided into three areas: (1) tool for management decision-making (service); (2) controllership (function); (3) public accounting (profession); and these three roles in turn influence the content of subject matter of the academic courses. Professor Jacobsen goes on to point out the traditional division of subject matter between financial and cost accounting which is called the public accounting approach on the one hand and the private, industrial, management, or management accounting approach on the other.

This clarification of terms, content, and approach will be read by many with interest and relief. It so happens that people who write on cost accounting, managerial accounting, or one of the many other names used to designate the subject area, introduce a new descriptive name and proceed to expand their ideas as if their subject were a completely new concept, while in reality it is an extension or further development of cost accounting. Professor Jacobsen sums it up well by saying, "the content of management accounting as an expansion of the narrower cost accounting appropriately includes accounting policy and internal applications of the use of accounting

data for such items as day-to-day decisions by management personnel, choice among alternatives and economic studies, as influenced by evolving developments in electronic data processing, management science and mathematical and statistical applications. The term management accounting more implies course content rather than learning, teaching, or textbook approaches."

The next part of the article covers the problem of designing accounting courses in universities. One of the major factors that will govern the approach of a course is the level of the student. Naturally, the make-up of a course would be different for an undergraduate and a post-graduate.

The article concludes with a commentary on recent developments that will change the content and emphasis of accounting courses. This does an excellent job of setting acounting education in perspective. Most of the problems will be familiar to those in S.I.C.A. who have worked on course development. When the content of the present courses, developments in the Society program over the past years, and plans for the future are reviewed in the light of Professor Jacobsen's comments, one must conclude that there is a healthy awareness of the problems to be faced and resolved.

S.I.C.A. does not encounter the problems that universities do in the integration of cost-management and public accounting courses, since the emphasis is on the industrial phase. However, it has been found necessary to include courses on financial accounting to give the student a broad appreciation of the complete accounting function.

When the Society developed its curriculum and decided on the content of the courses, the advice of able and responsible men in the business world was sought. This assistance, when added to the work of the men from the universities, allowed the Society to develop accounting courses that are oriented to actual business needs as well as satisfying high academic standards. This same practice has been followed when the courses have been revised to meet changes in the field of accounting education.

The introduction of business men to the committees and groundwork stage of Society work has had many beneficial results. First, it has given these men a healthy appreciation of the problems involved in training proficient men for industry, and thereby, has made them strong supporters and contributors to education. Second, it provides them with first-hand knowledge of the level of training that a student has reached when he has acquired the R.I.A. This enables management to have a better appreciation of a man's worth before employing him. Finally, it bridges the gap between industry and education, in that course content can be oriented to industrial needs and industry is kept aware of new developments in accounting education. By participation in S.I.C.A. activities, the business man is forced to broaden his knowledge and, simultaneously, become more discerning in his analysis of business literature. In constructively criticizing and assessing the contributions of his colleagues in the work of the Society, he unconsciously states his own considered opinion, thereby adding to the clarification and solution of a problem.

To the casual observer, the many relationships and objectives of the Society may not, at times appear too clear. However, the growth and increased stature of S.I.C.A. in the business community is indicative of the successful arrangements and associations by which the educational program and its related activities have been executed.

SYSTEM INSTALLATIONS AND PEOPLE

By Carl M. Nyberg,
Planning and Control Supervisor,
Fabricated Metal Goods Division,
The American Brass Company,
Waterbury, Connecticut.

Almost as important as the system itself in any new systems installation, is the way in which it is presented to the people involved. Their reactions, favorable or unfavorable, can make or break the system. This article points out some commonsense methods by which the accountant installing a new system can gain the cooperation of the personnel he works with.

PLANNING and installing a new accounting system is a problem almost every accountant meets at some time in his career.

At first thought, it might seem the most important aspect of a system installation is the system itself. Although the importance of a sound and practical system cannot be overemphasized, the final success or failure will be determined by one other factor. That factor is people—the individual personalities that make up a particular organization.

Although human relations has received much attention in the past decade, little has been said about the problems of human relations as applied to accounting system installation. Yet from the conception of the idea until the fruits of the new system are realized, the accountant's most difficult problem will probably lie not in the technical realm but with people. I do not wish to imply that all the problems involving people are in the nature of resistance or a conscious or subconscious effort to discredit the program and its proponents. This does not always occur but it occurs more frequently than it should. However, the accountant is always involved in selling, explaining, defending, training, etc., which all impose the problem of penetrating human minds and leaving positive impressions, willingly received, about the system, its purposes, objectives, values, etc. This is not a simple problem. It is not one which is taught in school along with systems, nor can the answer be lifted out of a textbook and applied. It is a problem further complicated by the fact that each person is not only a complex and different personality but is also highly changeable depending on the stresses placed upon him. Nevertheless, it is a problem with which the accountant must come to grips if he is to discharge his responsibilities successfully.

This paper is not intended to be a treatise on human relations and its counterpart, communications. Much has already been written on the subject by those who specialize in human relations. The purpose of this paper is to bring to the attention of those who may be planning an accounting installation for the first time a few of the areas where a little extra thought about the people concerned will mean a good start and a successful installation.

Mr. Nyberg's experience encompasses both public and industrial accounting. He has been involved in several extensive system installations and recently completed a job order cost installation at the Fabricated Metal Goods Division of the American Brass Company.

THE CHANGE ITSELF

Perhaps the first problem the accountant will meet in his dealings with people is that posed by the change which the system engenders. Because existing methods of operation may have had some success over a long period of time, it is frequently difficult to overcome the feeling that they should not be changed, or that additions or improvements are not required. It is also difficult for many to accept the challenge of change, particularly when it involves somewhat intangible benefits. Many do not accept the fact that everyone should play a part in the progress that is constantly going on about us. Nevertheless, before any further progress can be made, the degree to which this problem may exist will have to be appraised carefully and a definite plan developed to obviate the problem.

Being able to talk convincingly about the proposal is of prime importance in selling the need and desirability of a proposed program. In order to do this, the accountant should have clearly defined the need for and objectives of the system, how the objectives are to be accomplished, and what it will cost in terms of clerical personnel and/or mechanical equipment. Whether he should prepare a formal written presentation will depend upon his analysis of the amount of selling required and what method of presentation will be most effective. As a minimum, he should rough out his plans on paper to be sure that he has covered all aspects of the problem. The inability to answer an important question can easily create the impression that the idea is "half-baked" or that the accountant is incapable of carrying through the suggested program.

OTHER MANAGEMENT PERSONNEL

The problem the accountant may face concerning people will vary considerably depending upon the scope and type of system he plans to install. Within the accounting department, the problem may be almost non-existent. But once the accountant branches out into other areas of the organization and becomes involved in programs such as budgets or cost controls, he immediately comes into contact with all other management personnel from the foreman up. The most significant aspect of this relationship is that he will have no direct authority over these people, as he has in his own department. However, these people will have a direct bearing upon the success or failure of the program. No matter how perfect technically a system may be, it serves no value and must be considered a failure unless it is used profitably by the managing personnel of a company. It is therefore essential that the accountant develop a relationship with these people which will result in their fullest cooperation.

It should also be realized that a budget or cost control program, for example, can have a tremendous impact upon the management group of the organization. There are many reasons for this. First, programs of this kind tend to be restrictive, requiring a manager to operate within predetermined limits and necessitating explanations about deviations. Second, a manager may lack confidence and fear that his poor performance will prove embarrassing. Third, he may be carrying a heavy workload and resent the intrusion of a new problem into his daily life. Fourth, a manager may be antagonistic, feeling that accountants should tend to their bookkeeping and keep out of his affairs. These are but a few of the underlying causes which create resistance to the accountant's efforts to bring the organization's financial affairs under reasonable control.

To say that the accountant must be successful in selling his program to every member of management to the point that each one will support it actively would be to expect too much. But he must be successful in selling it to the majority of management, especially at the upper level of the organization. A special effort should be made to sell all department heads since they have the authority to insist upon the cooperation of those under their control. However, the wider the voluntary acceptance, the fewer problems the accountant will have in installing a successful system.

APPROACHES TO INDOCTRINATION

Once the accountant has received top approval to proceed with his system, he should take steps to indoctrinate all other members of management who will be concerned with it.

Perhaps the best way to approach this problem is to hold one or several meetings during which the accountant would cover the program in the following terms:

1. What is the nature of the program, i.e., budgets, cost controls, etc.
2. Why it is needed.
3. What will be the mechanics of the system. That is, how will information be collected, summarized and reported.
4. How the mechanical features will affect different individuals. That is, how will managers be responsible for reporting labor, material usage, scrap, production, etc.
5. In what way the results will be reported.
6. What each one's responsibility will be with respect to the results.

During these general meetings the accountant should confine his remarks and the discussion to the general aspects of the system. Special problems should be discussed separately with the individuals concerned. He should encourage everyone to express themselves freely about the system and the possible difficulties. In other words, he should avoid creating the impression that he has all the answers and does not have to look to others for suggestions and help. It has been previously noted that the final success of the system will depend largely upon the willing cooperation of the managers. There is no quicker way to alienate their goodwill than to ignore their intelligence and the special knowledge they have of their own departments.

In discussing the objects of the proposed system with management, it is most important to be completely candid. One should not deny nor avoid stating that the object of the system is to control and improve operating results on the premise that individuals will not like it and therefore will oppose it. If the managers are as intelligent as they should be, they will realize and resent what is being attempted. It should be pointed out that it is the accounting department's responsibility to provide the tools required in the form of information and timely reports.

Following, or interspersed with the group meetings, the accountant should discuss the system with each member of management individually. This will give him an opportunity to find out exactly how each person feels about the system and to deal with specific problems.

ESTABLISHING TIME REQUIREMENTS

The problem of time is frequently a crucial factor to an accountant. A fine piece of accounting workmanship is often thrust aside as valueless because time has rendered it obsolete.

Time is also an important factor in systems installations. If the battle to get ap-

proval of a proposed system has been heated, the question of delivery of the promised benefits can become a major irritant if not handled properly from the start.

In considering the problem of time, it would be well to separate the program into two parts. The first concerns the general mechanics of the system, the equipment and forms that will be required, who will accumulate and process the data, and what reports will be prepared. The second concerns the effective utilization of reports or the reduction in administrative costs, whichever is the major object of the system.

The problem of establishing a timetable for the installation can be considered in three parts, as follows:

1. Time required to obtain equipment and forms.
2. Time to put equipment and forms into use and train personnel.
3. Time required to check out results for errors.

The first step will not be difficult since suppliers will provide the required data.

Step two may seem an impossible task since there are so many variables where people are involved. However, if the sequence of each major step in the installations is carefully outlined and the involvement of each carefully evaluated, establishing a reasonable time requirement should not be too difficult. A carefully-planned schedule of this type will not only be of tremendous benefit to the accountant in knowing just when and where he is going to make his next move, but it can also prevent unnecessary pressure being brought to bear by other executives for results before it is reasonable that they should be available. This factor can be very important if the major object of the system change is the reduction of clerical help. Executives who have approved an expenditure for this purpose will often follow it very closely to make sure that the promised reduction actually materializes.

It will also be well to consider the length of time required for management personnel to become familiar with the reports, their meaning and implications. This may mean more group meetings; however, it will almost invariably require a meeting with each indvidual to whom a report is issued. It frequently requires a considerable amount of analytic work to dig out information that will assure the sceptic that the information reported is factual. This may take several months but before the new system can be considered installed each person must not only understand the reports but must also feel that the data presented are correct.

Problems involving budget installations can take even longer to work out, particularly if budgets are to be prepared on an annual basis. Several years are fequently required before experience gained can be utilized in subsequent forecasts.

INSTALLATION PROBLEMS

Since the nature of an accounting system is to collect data covering a calendar period, it is usually necessary to start a system on a specific date. This creates one of the greatest problems in system installations since it prevents a gradual changeover paced to the speed with which the clerical staff is able to absorb the change. However, it is quite often possible to install some parts of the system in advance of the major change. Full advantage should be taken of such possibilities since the experience gained from such partial installations can be invaluable and also serve as a useful training period for clerical personnel.

By and large, the brunt of the installation will fall upon the first day of an accounting period with the old system being cut loose, the new one going into effect.

Its smooth progress will depend upon the care with which the plans have been laid and personnel have been instructed. However, smoothness in installation and time involved to perform the new functions can be two different things, particularly if the change is extensive. When the clerical functions have been completely changed, it should be anticipated that individual productivity may drop 25 to 30% and stay at that level for several weeks. Either overtime or temporary clerical help will be necessary, probably a combination of both. Temporary help is a better solution than excessive overtime from both the cost and efficiency standpoint. Most cities are now serviced by organizations which can provide trained temporary help on any hourly basis at a very reasonable cost. This service should not be overlooked when extensive system changes are to be made.

One of the greatest enemies of the installation period is confusion. Confusion results from people not knowing what they are supposed to be doing and when. It is actually a state of immobilizing ignorance existing in a situation which demands activity. Aside from the fact that confusion hinders the progress of work, it can also have serious psychological effects upon the clerical staff.

There are a number of steps which can be taken to minimize confusion during the installation period:

1. Lay out the flow of paper work. Know who is to handle each segment.
2. Know the exact sequence in which the work must be done.
3. Prepare a chart on which the progress of the installation can be noted.
4. Make sure that each person knows what is expected of him. Prepare simple step-by-step procedures in writing.
5. Complete a day's work each day. There is nothing more demoralizing for clerical employees than to arrive in the morning and find work left over from the day before, knowing that they cannot complete a regular day's work, let alone catch up on a backlog. Use overtime or extra help to keep up to date.

TRAINING AND CLERICAL DIFFICULTIES

Perhaps the best pre-installation training is an explanation of what is to be done and why. Usually in the course of planning a system it is necessary to discuss certain aspects of the work with clerical personnel. These discussions will afford an excellent opportunity to cover not only the immediate business at hand but to discuss also the over-all objectives of the system. Knowing why something is done and feeling that one is a part of the moving force of the company helps to develop the right mental attitude which will be invaluable when the hard work of installation commences.

Morale is very important at this point in planning. The clerical personnel will, in the final analysis, do the actual work. Bringing them up to "Installation Day" with the feeling that the system will be a success is important. It is important also to eliminate any fears about their job and their ability to do it.

If one object of the system is the reduction of clerical help, and the reduction is going to be brought about through transfer or attrition, all should be informed of this in order to eliminate any worry about job security. If the reduction is to be made by a direct cut, key personnel and the better-than-average clerical personnel should be informed in some way that their positions are secure. Rumours can start very easily at a time like this, which may panic some individuals into looking for and taking other jobs.

There are several ways of letting a person know where he or she stands with the organization. One is to praise his work and ability, another is to discuss objectives six months or a year from now and what it is expected the person will be doing at that time, and another is a pay raise. Pay raises, if about due but not formally scheduled, are perhaps better left to some time after the new system has started. At that time they can be made with an expression of appreciation for the extra effort that has been made (and it will have been made in most cases). They may also serve to boost the morale of the people when the confusion, the fatigue, and the long hours have begun to diminish and the new system shows signs of settling down into an intelligible routine.

It is also important at this stage for each person to know, at least in a general way, what he will be expected to do. Direct parallels should be made between his present and future duties and similarities noted wherever they exist. Impress upon personnel that assistance will be available during the initial stages of the installation and that they will not be expected to become masters of the new methods within the first two or three days. Many people lack self-confidence and feel that they do not have the ability to master a new system or that the new system will be too complicated for them. This feeling can manifest itself either in aggressive opposition to the system, or in worry that causes the person to become ineffective. In a large group it is not unusual to find one or two clerks who fall into this classification.

A good 90% of the personnel will, however, take the change in stride, doing their part conscientiously without worrying about whether the system succeeds or fails, looking forward only to payday and tonight's date. They will actually be the easiest to handle, since they will have no deep feelings about the matter and will accept instructions and direction without becoming emotionally involved.

Old-time clerical workers who have been doing the same job the same way for 15 or 20 years are quite often the most difficult to win over. To them, the change means only having to leave well worn ruts and almost subconscious reactions. Also, their stature in the department may be based on the fact that they know the ins and outs of the present system and every new clerk for the last 15 years has been tutored under them. The levelling effect of the new system can be quite devastating to their prestige, and although such persons will rarely quit, they tend to become non-cooperative. Perhaps the best way to offset this tendency is to give such persons advance training or instruction in the new system and use them as teachers or checkers, thereby taking care of their ego. Whether this can be done or not, at least talk to them first, telling them about the new system and recognizing the fine job they have been doing over the years.

SUMMARY

A new accounting system is the product of many things. It stems from a need to control and improve performance; it is conceived in theory and moulded to fit a company's particular business problem, but it is executed and utilized by people. The dependence upon people to approve, process data, prepare reports, and utilize the information produced, makes it imperative that this phase of system planning receive the attention it requires. The time that the accountant spends in planning the human side of the installation problem will be a determining factor in the success of a system installation.

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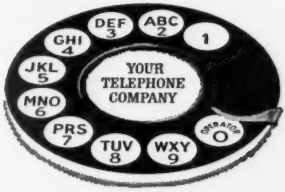

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The Economic SCENE . . .

by W. Allan Beckett

THE OUTLOOK FOR CANADIAN FOREIGN TRADE FOR 1960

CANADIAN exports and imports in 1960 will both reach record levels. The strengthening demand for industrial materials, flowing from growing rates of economic activity in both North America and Western Europe, began to be reflected in export levels about the middle of last year. Some uncertainty remained. Export patterns were distorted by the U.S. steel strike in 1959 and revealed wide fluctuations in the monthly returns. January and February, for instance, were at the lowest level for that period since 1954, while exports in June reached an all-time record. A large element of anticipatory buying resulted in high level of exports to the United States in the middle of the year followed by a weakening as the strike began to take effect. With these offsetting movements, it is doubtful if the strike had much effect on the total annual export level to the United States in 1959.

By the end of the year, it was clear that Canadian exports were responding positively in their historical pattern to the upward trend in the business cycle. The November-December seasonally adjusted annual rate for domestic exports was well over $700 millions higher than in the early months. This strengthening trend will continue to at least mid-1960 and probably beyond. Gains in the latter half of 1960 are likely to be more limited than those which will occur in the earlier months.

The extent of the increase will lie between 7% and 10%, assuming a general price increase of about 2%. A drop in the exchange rate of the Canadian dollar would be reflected in a greater increase.

In commodity composition, the contribution to this higher level of exports will be concentrated in the industrial materials group; newsprint, iron ore, aluminum, nickel, crude petroleum and asbestos may be expected to show the most emphatic gains. In the wood products—mineral—metals groups, two important commodities may not share in the general increase. A lower rate of residential construction in the United States and an expected rise in the world cargo freight rate structure will probably limit exports of softwood lumber. There has as yet been little clarification by either the industry or government regarding the prospects of contractual re-arrangements for uranium ore. Present rates of production are difficult to reconcile with the appopriations of the United States Atomic Energy Commission for uranium purchases. A stretch-out in contracts would inevitably reduce the value of Canadian uranium exports in 1960. With these two exceptions the value of exports of industrial materials may well increase by 25% above 1959 levels.

Agricultural exports, however, may decline moderately. The usual problems of over-supply and marketing face wheat sales. Thus far in the crop year, exports of wheat have been well maintained, but domestic supplies in some important European markets have improved considerably and coming months are likely to reflect this in lower purchases. Whether the Federal Government would expand assisted shipments to under-developed countries, if wheat sales in general falter, will be an important factor in the 1960 levels of wheat exports.

Exports of beef cattle to the United States have fallen off steeply. The 1959 export value was $40 millions below the 1958 value—a decline of over 50%, most of which occurred in the later months of the year. The American cattle cycle is now on an upward trend and the price gap between Canadian and American beef has closed to a point where little outward movement of cattle is likely for some months to come.

The better prospects for manufactured goods in an expanding world market may be limited by rigorous competition from foreign producers. No major changes are likely to occur in this sector, except in sales of aircraft. These will show some improvement as Caribou planes go to the United States Army.

The general outlook for Canadian exports in 1960 is therefore for a fairly strong upward trend based on industrial materials sales and generally maintained levels in other commodities.

In line with domestic economic expansion and an increase in capital expenditures, particularly for machinery, the level of imports will also rise in 1960. While import levels are extremely volatile, in 1960 they are not likely, as in 1959, to rise at roughly double the rate of increase in exports.

For some months now the relative rates of increase of exports and imports have been narrowing. At midyear, imports were 11.5% higher than in 1958. Exports had risen by only 1.5%. At year end the comparative increases were, for imports, a little over 9% and, for exports, 5%. In November alone exports had increased, on a year to year basis almost three times as much as imports, and for the first time in the year produced an export surplus on commodity trade. It is probable that, in the last quarter as a whole, a near balance or a merchandise surplus will appear in commodity trade, thus mitigating the size of the current external deficit in Canada's international transactions.

This trend of narrowing rates of increase will probably continue in the coming months, particularly in the first quarter of 1960 and could conceivably reverse the pattern of 1959 with exports increasing at a greater rate than imports. While this would assist in reducing the external deficit on current account it would not necessarily be an unmixed blessing.

A rise in exports inevitably involves some increase in imports and, further, through dividend payments on foreign-owned export industries and other invisible transactions, an increase in non-merchandise items. How much the changing patterns of exports and imports during 1960 will affect overall current transactions during the year can only be, at this time, conjectural. Their effect however seems unlikely to be great enough to cause a reduction which would remove the present apprehension regarding the size of Canada's external debt.

PAYNE, PATTON & PUGSLEY

CHARTERED ACCOUNTANTS

Gordon S. J. Payne, C.A.
Philip T. R. Pugsley, C.A.
Donald R. Patton, C.A.
Donald W. Burke, C.A.

Suite 14, The Linton,
1509 Sherbrooke St. West
Montreal, Que.

S.I.C.A. STAFF APPOINTMENT

D. G. Lingwood, B.Sc. (Ed.)

T. A. KENNEDY, President of the Society of Industrial and Cost Accountants of Canada, is pleased to announce the appointment of D. G. Lingwood to the post of Administrator, Educational Services.

Mr. Lingwood was formerly Employee Services Manager of A. V. Roe Canada Ltd., with which company he was employed for the past nine and a half years.

He graduated with the degree B.Sc. (Ed.) from Northwestern University, Evanstown, Illinois, and during World War II, he served as a Navigator with the R.C.A.F. Prior to joining Avro, he was associated with the Toronto Y.M.C.A. Conference Service as Assistant Director.

Mr. Lingwood is a member of the Toronto Personnel Association and a member of the School Board of his home community of Caledon East.

PERSONALS

J. R. GRINER, Chairman of the Toronto Chapter, has joined Cole Lumber Co., Ltd., Hamilton, as General Manager.

JOHN GRUNDY, Treasurer of Sherbrooke Machineries Ltd., has assumed the added duties of Controller. Mr. Grundy is a member of the Eastern Townships Chapter.

M. E. COOK, formerly Senior Accountant of Sherbrooke Machineries Ltd., has been appointed Assistant Controller. Mr. Cook is Chairman of the Eastern Townships Chapter.

B. E. WALKER, formerly Office Manager of Deloro Stellite, Belleville, has been appointed Chief Accountant with Anglo-American Drugs, Oshawa.

MRS. ANN-MARIE BOYER, R.I.A., has been appointed Marketing, Planning and Research Manager for Dow Brewery, Montreal. With Dow since 1942, Mrs. Boyer has held the post of Marketing Research Manager since October 1958. She was the first woman in Canada to receive the R.I.A. certificate.

S. BURNS LAIRD, B. COMM., has been appointed Manager of the Farm House Frozen Pie Division of Morrison Lamothe Bakery Ltd. Mr. Laird is a General Member of the Ottawa Chapter.

W. E. GORDON, B. COMM., R.I.A., has been appointed Controller for the Spinco Division of Beckman Instruments, Inc. and the company's subsidiary Shockley Transistor Corp., both headquartered in Palo Alto, California. Mr. Gordon was formerly Operations Analysis Manager for the Ford Motor Co. of Canada Ltd., Windsor, and a lecturer in Advanced Cost Accounting at Assumption University.

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PROFESSIONAL EDUCATION IN MANAGEMENT ACCOUNTING

By Jean Caro,
Comptroller,
Service Backing & Coating Corp.,
Montreal, Quebec.

Canadian accounting educators can learn much from the pattern for post-graduate study in management accounting set by the British Institute of Cost and Works Accountants. This article outlines the entrance and examination requirements, the subjects covered and the results of the program after seven years in operation.

THE report of the Committee on Management Accounting of the American Accounting Association (*Accounting Review,* April 1959, pages 207-214) emphasizes the need for a new approach to education in management accounting. It deplores the fact that present classroom instruction and curricula give only limited cognizance to the specific needs of management accounting and are vulnerable to criticism. The area of management accounting is given little consideration in the American certificate examinations and the program developed for those planning to enter public practice is deficient in this respect.

The committee recommends a re-orientation of present accounting instruction and the offering of new courses, which should involve the integration of quantitative tools, e.g. accounting, statistics, mathematics, and the management process.

Other committees have suggested the establishment of professional schools of accounting, as distinct from the customary schools of commerce or business administration.

Canadian accounting instruction faces the same dilemma, with the difference that plans are under way which propose a more realistic and direct solution to the problem. Rather than crowding further an already over-crowded curriculum, a post-graduate program in management accounting, leading to an advanced professional accounting degree, is considered the most feasible, if not the only, remedy.

Such a post-graduate program, novel as it would be in Canadian accounting in-

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Comptroller of Service Backing & Coating Corp. since May 1958, the author has held accounting and administrative positions in Montreal since 1952 and has also engaged in consulting work. Following formal university studies in France, which were interrupted by several years as a prisoner of war, he began advanced studies in accountancy, law, administration and management in 1944. Since that time, also, he has taught business and management subjects and languages, has done legal translation work, and has conducted research and written articles on accounting and related subjects. A fellow of the Institute of Linguists (England) and holder of several specialist diplomae, including a law degree, he was resettlement officer of the American Joint Distribution Committee in several European countries from 1947-1952. He is a Certified General Accountant, a member of S.I.C.A., Montreal Chapter Canadian Credit Institute, Montreal Translators' Society and a Fellow of two English Accountancy Societies.

struction, is by no means a new educational experiment to be viewed with scepticism, the results of which, it may be argued, would be capable of being measured and evaluated only after a lengthy period of trial and error. No, a post-graduate course in management accounting has already proven its sound educational value and practicability for many years in England, and Canadian accountancy can safely follow certain patterns which have produced very tangible benefits and unquestionable results in actual practice.

The set-up of the Canadian accounting profession is very similar to the situation we find in the United Kingdom. In both countries several professional bodies prescribe a distinct course of study and training which their respective students must follow. Each body sets its own examination and awards its own professional certificate of qualification.

This is in clear contrast with the set-up in the United States, where the professional certificate of qualification, i.e. the C.P.A. certificate, is granted exclusively by the Accountancy Boards of the individual states. Most states have adopted a uniform examination under the auspices of the American Institute of Certified Public Accountants. The emphasis in the American examinations lies obviously in the area of public acountancy, although many certificate holders turn to other fields such as industry and commerce.

The several British professional bodies prepare their candidates for diversified areas of professional accountancy, such as public, industrial, or municipal. Many graduates, rather than remaining in the field for which their respective course and examination have prepared them, enter a different field and the area of industrial and management accounting, with its many possibilities, attracts many graduates. However, none of the several professional bodies provided specific training and instruction in this field which would qualify a candidate for assuming the ever-growing diversified responsibilities of management accounting. There was no professional course or examination to show that a candidate aspiring to positions in this area was especially trained and qualified as a management accountant. There was no professional designation to indicate that the candidate had specialized in management accounting. This is exactly the same problem which Canadian accountancy and industry face today, the identical issue which American universities and accounting bodies have been debating again and again.

Realizing that there was no recognized qualification in management accounting indicating that an accountant possessed the practical experience and technical knowledge which would fit him for the senior accountancy positions in modern industry, in spite of the rigid training and study requirements in other respects of accountancy as administered by the several professional bodies, the Council of the Institute of Cost and Works Accountants in Great Britain decided to overcome this obvious gap. After several years of research, it introduced in 1952 a post-graduate program leading to the professional designation of Fellow in Management Accountancy.

REQUIREMENTS OF THE INSTITUTE

The requirements of the Institute are rigid:

To be allowed to write the fellowship examination, the candidate must be *at least* 25 years of age, be an associate (i.e. a graduate) of the Institute, and must

have had not less than three years practical experience in cost accounting. The examinations are open also to graduates of other recognized accounting bodies in the United Kingdom and other Commonwealth countries, providing of course that the requirements as to age and cost accounting experience are met.

In order to be awarded the degree of fellow in management accountancy, a candidate must have passed the prescribed examinations, be *at least* 26 years of age, must have had not less than five years' experience either in a responsible position in management accountancy or as a practising consultant, and must be engaged in either of these capacities at the time of making his application.

Candidates are free to pursue a course of study of their own choice, as made available by several colleges, either by residence or correspondence instruction.

The examination consists of two parts, A and B. Each part must be passed in toto at the same sitting; no supplementaries are granted: a candidate failing in one paper must repeat the entire examination, i.e. part A or B. The examinations take place once a year, in various centres.

Part A consists of five papers:

1) *Management Accountancy*—3 hours:
Sources of capital, investment of capital, control of current assets, internal audit, marginal control for top management, budgetary control for top management, forecasting, reports for boards, chief executives, bankers, etc.

2) *Company Law*—2 hours:
Exemptions are allowed in this subject for graduates of certain professional bodies and educational institutions. This subject covers nature and formation of companies, memorandum and articles of association, membership of a company, flotation of companies, capital and borrowing powers, the executive, general meetings, accounts and audit, winding-up.

3) *Management—Factory and Distribution*—2 hours:
Factory: Formation and development of a manufacturing undertaking, functional responsibilities of departments within the factory, relations with other divisions of the undertaking.
Distribution: The scope of the distribution functions, policy problems, organization and control.

4) *Statistical Method*—2 hours:
Scope and application of statistics, statistical devices, statistical method and the individual firm, current sources of statistics.

5) *Economic Aspects of Industry and Commerce*—2 hours:
Production and distribution, factors of production, optimum size of an undertaking, chief types of business organization, money and credit, localization of industry, trade cycles, home and export trade.

Part B consists of three papers of 3 hours each, covering Advanced Cost Accountancy and may be divided into the following three main areas:

Compilation of costs (application and techniques), organization of the cost department (function and methods),
Interpretation of cost data (analysis use, influence, managerial applications, effect upon the activities of the several functions of the undertaking).

As we can see, the areas covered by the examinations are quite vast and comprise practically every aspect of management acounting. Most subjects appear in one form or another in the curriculum of the several acounting bodies, but are treated here under a different angle, i.e. the emphasis lies on the managerial point of view.

RESULTS OF THE BRITISH PROGRAM

The first examination was held in December 1953, i.e. seven years only of actual experience are available to evaluate the results of the relatively new educational endeavour to form qualified management accountants. A very short time indeed, but already it is clear that the plan introduced by the Institute of Cost and Works Accountants has been successful. So far 677 candidates have sat for the examinations, of whom 120 have passed. This means that 18% have passed the rigid examination requirements, and 82%, all graduate accountants with the prerequisite practical experience in managerial accounting, have failed. This severe selection is healthy and apt to enhance the value of the new qualification. The objective of the program is not to form a new category of accountants, but to train qualified accountants for the top positions in the area of management accounting, which industry desperately needs. The new degree being a hall-mark of achievement in managerial accounting, it is not surprising that it is increasingly becoming recognized as such by industry and demanded as a qualification for the senior posts.

Shortly after the introduction of the program, British industry manifested its interest in the project of post-graduate education by making available additional training facilities and encouraging its promising executive accounting personnel to follow the new courses. Educational institutions have shown an equal interest by offering special courses of study preparing for the fellowship examination.

After only seven years of existence, the fellow degree in management accountancy has become an integral part of professional accounting training for industry in Great Britain, and seems indeed to have been the solution to the problem which British industry, British accountants and educators had to face.

Several years ago, an American accountant and educator recommended that American accountancy ought to learn from the English solution of the management accounting problem. Canadian industry and accountancy, too, ought to realize that a post-graduate course in management accounting seems to be the only realistic solution which would be suitable for Canada. A look across the Atlantic will prove to the most sceptical mind that a post-graduate program in management accounting can and does work. And the sooner Canada starts to form top management accountants, the sooner Canadian industry will benefit.

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SALES AND SERVICE ACROSS CANADA

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The Editor's Choice

YOU CAN RENT IT—BUT SHOULD YOU?

F. T. Knouss, N.A.A. Bulletin, Oct./59

With competition getting keener daily, the executive is faced with a greater challenge than ever. In order for his company to survive he must take every opportunity to reduce costs and thus gain advantage. The author compares the attractive features of both renting and buying and points out that the principles involved are pertinent whether considering office equipment or manufacturing facilities. He also points out that the choice is available to both large and small companies.

SETTING UP AND REPORTING STANDARD COSTS IN SMALL BRANCH PLANT

by R. D. Rosenberg, N.A.A. Bulletin, Jan. /60

The author points out that in the independent privately-owned plants the management is so familiar with the operation that an extensive cost reporting system is not always necessary. In the case of branch plants, executives who have profit responsibility are sometimes far removed from operating personnel—thus the need for accurate cost and performance reporting is very necessary in order for the executives to carry out their functions properly. The article outlines a simple adequate system that can be operated by a minimum of cost accountants.

RETURN ON CAPITAL AS A GUIDE TO MANAGERIAL DECISIONS

N.A.A. Research Report #35

The first chapter of this study outlines the scope of the undertaking. It points out that rate of return on capital has been gradually giving acceptance as a measure of profit performance and as a means of assessing the worth of capital expenditures. The material is largely the result of "forty-four field interviews with companies which use rate of return as a management tool." The study points up the different methods of measuring return and also the different concepts of what constitutes capital.

THE U.S. INVENTS A NEW WAY TO GROW—REPORT TO EXECUTIVES

Business Week Jan. 23/60

In all the claims, counter-claims, and discussion on economic growth, much of the discussion has been superficial and tinged with political implications. This study assesses the growth of the U.S. in real terms and compares it with the rate of growth of other factors in the country. Inflation, investment, taxes, wages and profits are discussed in their cause and effect role. This is a vital and confusing question that faces the business world in particular: What will be the future growth, and what will be the spurs and brakes that will influence a country's economic future in the years ahead? This is a fresh assessment of a confused situation.

TOPICAL comments

LOOKING AHEAD

Labor negotiations in 1960 are expected to be tough and costly. There are several factors that will add to upward pressures on wage costs. First, deferred wage costs that have been carried over from previous year's contracts will be an automatic increase for some workers and serve as a negotiation basis for new contracts coming up. Second, the recent steel strike settlement will help set a pattern for labor demands. Third, each increase in wages will add to price increases, which in turn add to cost of living. When cost of living goes up, the escalator clauses in contracts call for further increases in pay. How fast will the merry-go-round travel in 1960? (Bus. Week, Jan. 1960).

An electrical control has been developed that will control the temperature and flow force of water in the home. The gadget mixes the water to the desired flow at the heater and eliminates the need of dual faucets. (Fin. Post, Jan. 30/60)

A machine has been developed that will bend straight pipe into any desired shape for muffler pipes on autos. If the machine works, it will eliminate the need for distributors to stock several thousand various styles and shapes, thus reduce a large inventory investment. (Fin. Post, Jan. 30/60)

ON THE PERSONAL SIDE

A U.S. paper company is selling a product that may even make landscapers out of those who never become excited over a seed catalogue. The new wonder nature aid is a mixture of grass seed, wood pulp, fertilizer and other additives. This mass is blown on the ground and dries with a mat that encourages germination and helps protect the grass in early stages of growth. (Fin. Post, Jan. 16/60)

The recent steel dispute served to point up once again the inadequacy of accounting methods and the consequent lack of uniformity and leadership that accountants should be giving the business world. In the long drawn out strike, the union leaders contended that the industry understated profits; on the other hand the companies argued that profits were overstated. An unresolved factor that clouded the issue was the old question of how to account for depreciation in a period of inflation. If accountants cannot reach agreement on such questions and make a statement that will have international acceptance, how can they expect the business world to look to them for leadership in such matters, or to respect them as men who are experts guided by basic rules in the practice of the profession?

Business failures in the third quarter of 1959 totalled over $17.1 million in liabilities —the largest ever recorded in Canada. In the same period for 1957, the figure was $14.7 million. The number of companies involved was 317 bringing the total from

the beginning of the year to 1033 with liabilities of over $48 million. Most of this increase was due to a high mortality rate in firms involved in construction either as builders or suppliers. (Fin. Post, Dec. 26, 1959)

The office collection seems firmly entrenched. A survey of 200 industrial executives representing a cross-section of industry reveals that 71% of the firms permit fund raising for events such as weddings. Many firms permit pools or minor forms of gambling, but about 27% prohibit all collections. Some 85% of the panelists permit charity drives in their plants or offices.

OF GENERAL INTEREST

Highlights of the 'Fifties:

The St. Lawrence Seaway
The Trans-Canada Highway
Natural Gas and Oil Pipelines
The Saskatchewan Dam
Population increase from 13 to 18 million
Actual raise in weekly earnings in manufacturing industries of 70% with a raise of 25% in prices
G.N.P. raised from $16 to $35 billion, with higher prices accounting for about 25% of the increase
Federal government expenditure tripled from $2 to $6 billion
A new federal party after 22 years of Liberal power
Two Canadian Governors-General.

Add to these achievements vast expansion in mining and manufacturing, offices and living accommodation, schools and hospitals, and it all adds up to a great building boom. On the debit side we have found that there is still room for vast improvements:

The balance of payments was unfavourable in each year except 1952 during the Korean War.

Increase in world competition hit many domestic industries.

World-wide achievements in industry, science and education raised grave doubts about our present adequacy in the field of education, and ability to produce at a competitive cost.

The 'Fifties have marked the beginning of many firsts and have left for the 'Sixties a great number of challenges which, if met, will make the next decade's achievements even greater in the way of progress. (CMA Jan. /60)

The Bureau of Labor Statistics in the U.S. has been laboring for two years on a report on post-war gains in production per man-hour in comparison with a 50-year span. The results of the report are subject to much criticism, many interpretations, and nothing new or definite. The results seem to indicate that there is a gain in man-hour output of 35-40% per decade since World War II, compared to 29% per decade since World War I. However, the report is subject to several defects that make concrete figures difficult to quote. There is no breakdown between non-manufacturing and manufacturing industries prior to 1947. There are two ways in which the mathematical data may be interpreted; and different mathematical techniques give different results, especially in statistics. (Bus. Week, Jan. 16/60)

PROCESS COSTS IN A PULPBOARD INDUSTRY*

By W. G. Clarence Ripley,
Treasurer-Manager,
Thorold Community Credit Union Limited,
Thorold, Ontario.

The following thesis describes a cost system for the manufacture of boxboard and pulpboard in a hypothetical company. The cost system is basically a historical cost plan evolving actual costs and the nature of the industry is particularly well suited to the process cost system in use.

CANADIAN Pulp and Pulpboard is a fictitious company referred to throughout this thesis as Can-Pulp Limited. However, it is based on a very real and thriving enterprise.

Five major groups of products are manufactured:

1. Newsprint
2. Fibre wallboards
3. Groundwood pulps
4. Boxboards in rolls or sheets
5. Pulpboards in rolls.

The latter two products form the subject material of this thesis and it is the accounting procedures and manufacturing departments involved in their production that will be described.[1]

BOXBOARD

Boxboard is a "built-up" paperboard composed of various layers of stock depending on the thickness desired. It can range in caliper from .017 to .050 inches. Sheet and roll sizes are specified by the customer as well as color and finish. It can be a folding or non-folding board; coated or uncoated. The product is used to form light weight boxes for candy, clothing, prepared cereals, etc.

PULPBOARD

Pulpboards are finished as rolls in widths from 18¼″ to 97¼″ and are of two types; that transferred internally at Can-Pulp to the fibre wallboard division to become part of laminated fibre wall board; and that sold to the manufacturers of plasterboards to be used as the front and back liners of plaster wallboards.

* Condensation of a thesis submitted for R.I.A. qualification.

[1] The products considered here are classified as paperboard as distinct from paper. The A.S.T.M. Committee D-6 considers that a pulp sheet greater than 0.012 inches is to be regarded as board.

A Director of the Niagara Chapter, Mr. Ripley has been a Registered Member of the Ontario Society since last spring. He was born in Toronto but received his education in Columbus, Ohio. On returning to Canada, he was employed with the Beaver Wood Fibre Co. Ltd. until December 1958 when he was appointed to his present position of Treasurer-Manager of the Thorold Community Credit Union Limited.

PRODUCTION CONTROL

The bulk of the output of Can-Pulp Limited is sold to a few large customers. The board machines operate three eight-hour shifts per day. A five-day, forty-hour week of continuous operations is considered normal capacity. Goods are manufactured for stock only when activity falls below normal. Work is scheduled to the machine on specific order under the supervision of the chemical engineer.

A weekly operating schedule is prepared in advance for each board machine. Raw material in the solid state is weighed when it enters production and weight and grade are entered on a beater room furnish report. The most common unit of measure is tons or fractions thereof. Finished goods are weighed as they leave the paperboard machines and these weights are entered on a machine room daily report.

QUALITY CONTROL

For each grade of board manufactured the laboratory has prepared a standard formula sheet. This is also done for all new products. The standard formula is used by the cost accountant as a check on actual production figures and for reference in the preparation of material standards. It is also supplied to the beater room to provide the furnish[2] requirements for each grade of board manufactured.

Prime raw materials, such as sulphite and soda pulps, are rigidly inspected when they are received. Performance standards, specified by the purchasing department when the order is placed, must be met.

Waste papers are not tested upon receipt unless it is evident that excessive moisture is present. Too much moisture would affect the receiving weight adversely. The Canadian Pulp and Paper Association has set broad classifications for all types of scrap paper. These classifications have been accepted by the industry and all purchases conform to these classes.

Every unit of manufacture is individually inspected. Each roll is efficiently scrutinized for defects. The board is tested for square-foot weight, mullen, caliper, water absorption, and moisture percentage. The high standards of the inspection department must be met. Any unsatisfactory unit is marked and initialed by the inspector. A daily rejected roll report is completed. On this report is recorded the item rejected by number, grade, and cause of defect. Also shown is the date of manufacture and the shift on which the item was made. Management is thus able to pinpoint responsibility and investigate any excess spoilage.

THE CHART OF ACCOUNTS

General ledger and subsidiary ledger accounts are included in a four-part coding system. This method ensures that control of expenses is not lost due to having the expenses recorded in all-inclusive classes.

The first set of numbers names the general ledger control account and is for four digits. The first two digits identify the general classification, and the last two digits

[2] Furnish—An industry term used to designate the raw material entered into manufacture and required to produce the product.

show specific detail. The second set of numbers in the code is that of the subsidiary ledger accounts. The third set names the department and the last set, the income or expense detail. An accurate analysis of charges is made available. Subsidiary and detail accounts are reconciled each month with the respective general ledger control.

Below are three representative chart of account listings and the detail represented:

Ex. 1	7213-16-831	Cost of Sales (Manuf. Expense) Regular Beaters Supplies
Ex. 2	7301-11-501	Selling Expenses Domestic Postage
Ex. 3	2109-11	Prepaid Charges Manufacturing Supplies

GENERAL LEDGER CHART OF ACCOUNTS

(No attempt is made to reproduce the chart of accounts in its entirety but to furnish information that may assist the reader as the various accounts are mentioned. Some of those accounts having direct reference in the text are shown.)

Number	Sub-Account	Dept.	Detail	General Ledger Account Name
2109	X			Manufacturing Supplies
				70-Sales Income
7001				Gross Sales
				72-Cost of Sales
7210				Semi-Finished Prod. Inventory
7211		X	X	Raw material consumed
7213			X	Manufacturing Expense
7220				Inventories-Finished Goods
7223				Credit Finished Goods (Defective)

GENERAL LEDGER SUB-ACCOUNTS

Number	Sub-Account	General Ledger Sub-Account Name
2109	11	Manufacturing Supplies
	12	Felts, Wires
	Etc.	
		73-Selling Expense
7301	11	Selling Expense-Domestic
	Etc.	

DEPARTMENT CODES

Dept. Code	Department Name
15	Continuous Beater
16	Regular Beater
17	No. 1 machine
18	No. 2 machine
19	Finishing
20	Shipping
21	Sizing
	Overhead Departments
50	Electric Power
Etc.	

DETAIL CODE NUMBERS

Number	Type of Expense
	WAGES AND SALARIES
102	Managerial Salaries
103	Staff Salaries
104	Direct Labor
105	Clean-up
106	Maintenance and Repair
	SUPPLIES
831	Manufacturing Supplies
832	Roll Stock Finishing
833	Sheet Stock Finishing
Etc.	

THE COST SYSTEM

The cost system is basically a historical cost plan evolving actual costs. The nature of the industry is well suited to process costing and this system is in use at Can-Pulp. An outline of some of the basic features of this system will be described first, followed by the accumulation of costs in the various accounting functions; and finally, how these costs are transferred to the respective subsidiary and general ledger accounts.

Inventory valuation does not constitute a major problem. The rapidity of the manufacturing cycle makes work-in-process negligible. It is deemed to be constant and ignored for accounting purposes. Large inventories are seldom carried since finished goods are bulky and storage space costly.

All costs are classified as material costs or conversion costs. Material costs represent the "laid-down" value of the raw materials required to formulate the product. Conversion costs contain two elements—direct conversion and overhead. Every item of expense is charged directly to either a productive or service department. Expenses allocated to a productive department constitute direct conversion; those charged to a service department are overhead conversion.

The only cost accounts contained in the general ledger are the five divisions of cost of sales as listed below:

1. 7211 Cost of Sales Raw Materials
2. 7213 Cost of Sales Manufacturing Expense (Conversion)
3. 7223 Cost of Sales Credit Finished Goods Used in Mill-Defective Goods
4. 7220 Cost of Sales Difference in Finished Products Inventory (Plus or Minus)
5. 7210 Cost of Sales Difference in Semi-Finished Products Inventory (Plus or Minus)

The first three accounts represent the cost of goods manufactured. The five cost divisions together represent the cost of goods sold during the period.

All journal entries are pre-numbered and pre-printed. Each transaction has been

assigned a specific number which is used each month. A prefix designates the month to which the entry applies. This method assures that no entry is missed and saves considerable time at the month-end closing.

Two of the cost of sales classifications shown above represent differences in opening and closing inventory balances. Information for these accounts is obtained from a physical count of all inventory classes taken at the close of each period.

Extreme care is taken to ensure that accurate period costs are attained. Differences beyond an acceptably close tolerance require an inventory recount. Actual average period costs are used to price the inventories after they have been verified.

The manufacturing operations of the pulpboard division have been divided into seven direct cost centres based upon the function performed by each:

Dept. #15 Continuous Beaters	19 Finishing Dept.
16 Regular Beaters	20 Shipping Dept.
17 No. 1 Machine	21 Sizing Dept.
18 No. 2 Machine	

In addition to the above productive centres, there are 13 overhead cost centres and two service departments.

SOURCES OF MANUFACTURING EXPENSE

The summary and distribution sheets listed below provide the main sources of manufacturing expense items. The costs represented by these summaries are entered into the accounts at the close of the accounting period using pre-numbered journal entries as shown:

JE #40 Payroll Distribution (Hourly)	36 Stores Requisition Summary
15 Administrative Payroll	29 Voucher Register
41 Labor Fringe Benefits	28 Cash Fund Clearing Account

PURCHASING—RECEIVING—MANUFACTURING SUPPLIES

All purchases, other than raw materials, are made by the purchasing department upon receipt of a purchase requisition.

Manufacturing and maintenance supplies are kept in the stores department. A perpetual inventory stock card is prepared for each item. The card records receipts and deliveries and furnishes information showing minimum and maximum requirements.

A feature of the stores department, designed to eliminate clerical effort and expense, places all small miscellaneous items in one clearing account, 2109-16. This account is distributed at the close of the accounting period to departmental expense on a predetermined basis.

Issues are made from stores upon the receipt of a duly-authorized requisition. The requisitions are summarized by the departments at the close of the month on a stores distribution sheet from which a journal entry is prepared.

TIME-KEEPING—LABOR DISTRIBUTION

Factory personnel are all hourly-paid employees and receive their weekly pay in cash.

Daily time sheets are prepared for each shift by the departmental foreman. Provision is made to show work classification, hours applicable, and employee's clock number. The foreman deposits the previous day's time sheets in a locked box each

morning. The key is held by the person responsible for collecting the sheets and delivering them to the cost accountant. The cost accountant determines the total man hours worked for the day and initials the man hours as worked in each department. The sheets are then given to the time department.

Clock cards are collected each morning and the hours worked the previous day entered thereon. Card numbers are grouped to correspond to the various departments. Departmental and individual hours worked, as recorded on the tabulating cards, are checked against the same information and employee's number as reported on the departmental time sheets. Any changes required in the total man hours worked are referred immediately to the cost accountant for verification.

Hourly wage rates are entered on the time sheet, extensions are made, and the total daily monetary value of labor computed. This figure is given to the payroll department and used as a control to verify the weekly gross pay. As time sheet extensions are completed, the information is entered on the labor summary sheets. Costs are summarized by departmental total, and detailed labor accounts.

Before the journal entry distributing the labor is completed, the labor is reconciled with the actual payroll for the month taking into consideration any accrued payroll.

STANDARD COSTS

Standard costs are not integrated into the general accounts. They are employed as auxiliary or "control" costs.

Standards are prepared as standards of performance and standards of cost. A ton is the standard unit of production. Machine hour production expressed in tons is the standard of performance. Standard unit costs and standard machine rates are provided for each grade of board manufactured. Together, these comprise the commodity cost standards.

A long period of steady activity, continuous operations, a few product changes has provided management with an invaluable fund of past experience data.

Standards are revised at least once a year and an attempt is made to have this revision coincide with the renewal date of the union wage agreement.

The preparation of standards will be outlined in four parts, namely:

1. Material Standards
2. Conversion Standards—Labor
3. Conversion Standards—Non-Labor
4. Commodity Cost Standards.

MATERIAL STANDARDS

In preparing new standards, the cost department makes an analysis of the actual raw materials consumed in the preceding six-month period. Raw materials used in each grade of board are listed individually. Gross production for each grade of board is determined for the same period. The consumption is then divided by the tons produced to arrive at the quantities of the various raw materials required to produce one ton of board. These quantities are evaluated, using current raw material prices, to secure the gross material cost per ton. Allowance is made for machine loss to obtain net cost.

The results are reviewed by the cost accountant and abnormal conditions eliminated. The adjusted figures are compared with the standards in use and large variations scrutinized.

The purchasing department is consulted to determine contemplated price changes. Changes are effected, if needed, and the completed analysis is given to the chemical engineer. It is his responsibility to decide, after consultation with sales and production personnel, if the new standards reflect the true conditions and if changes are required.

CONVERSION STANDARDS—LABOR

The hourly employees, comprising all productive and non-productive factory personnel, are paid in accordance with the wage scale of the current union wage contract. It is expedient to have the revision of standards coincide with the renewal of this contract. The contract stipulates the wage rate and the number of men required in each department, a common practice in the industry. It has the effect of fixing, to a great extent, the departmental labor charge.

In departments where these procedures cannot be applied, six months' past experience is analyzed and the average departmental cost of labor for one month determined. This cost is adjusted to conform to the changing wage rates. Adjustments for labor fringe benefits are reflected in the costs in the same manner.

CONVERSION STANDARDS—NON-LABOR

This part covers all the manufacturing costs except those of raw material and labor. The analysis is again based upon the previous six months' experience and is prepared by departments for each element of cost. The average departmental cost per month is determined.

COMMODITY COST STANDARDS

The departmental conversion costs obtained are applied to the unit standard of production (a ton). The accepted departmental standard cost of conversion per operating hour is divided by the commodity production rate per hour to determine a standard departmental cost for each ton of board produced. The board cost per ton for each department is then totalled and the raw material cost per ton is added to this total. The resulting figures represent the total cost of manufacture, by grades for each ton of board produced.

The data are issued by the cost department in a revised statement of commodity cost standards. A small portion of the statement is shown below:

COMMODITY COST STANDARDS — REVISED — May 1, 19—.

GRADE	RATE PER HOUR	% SALE-ABLE	% PER-FECT	R.M. COST	CONVERSION DIRECT	CONVERSION O/HEAD	TOTAL COST
#1 Machine							
Grade A	$3.70	92.8	91.9	$34.12	$29.99	$ 7.45	$ 71.56
#2 Machine							
Grade A	3.70	92.8	91.9	34.12	33.04	9.01	78.17
Grade B	3.06	96.7	83.6	95.66	39.30	10.14	145.10

The departmental expense information required to produce the commodity standards is also utilized to prepare departmental cost standards. A standard is set for each expense element in each department.

The departmental standards are expressed as the standard departmental cost per operating hour and the standard departmental cost per ton of production.

BUDGETS

Budget forecasts are prepared for the normal capacity level. Activity has remained at this level for considerable time and is expected to remain so in the foreseeable future. No attempt is made to produce flexible budgets as they do not appear to be justified. Information of costs entailed at other than capacity levels can be computed, if required, from standard departmental costs per hour. The foregoing is not meant to imply that flexible budgets are not a desirable thing. They provide management with a further tool of control and changing conditions in future could make their use invaluable. This is especially true if future price forecasts should be required using "marginal cost" principles. The preparation of a flexible budget, in this industry, would require a series of fixed budgets representing the different levels of activity. This is due to many costs, normally variable, remaining fixed through several activity levels.

The control principle adhered to is "delegated responsibility." A departmental expense forecast is made for each department as provided by the chart of accounts. The individual responsible for the operation of each department must first review and approve the forecast before it is incorporated into the budget.

It is the task of the sales manager and his staff to break down the production forecast into sales by product divisions. The master sales budget in dollars is produced by extending the relative quantities at the expected selling prices.

Manufacturing cost budgets are built up from standard cost data at the same (normal) capacity level.

Sales, administrative and allied expense budgets are completed and a profit and loss forecast made for each month of the ensuing year.

The accounting plan generally follows accepted methods and procedures. It is a true process cost system and every effort is made to attain accurate period costs. The control features of standard costs and budgets are utilized although standard costs are not reflected in the accounts.

The journal entries representing the various distributions and summaries prepared at the close of the accounting period have been outlined. The methods used to determine the actual departmental and commodity costs of the month will now be described.

THE PRODUCTION DEPARTMENT

This department is a branch of the cost department. It is the task of the production department to record the unit quantities of production and consumption during the accounting period and prepare reports of these quantities for use by the cost accountant.

Pertinent data of raw materials consumed and finished goods produced are obtained from departmental reports. A daily production report is prepared summarizing the data. Gross production, machine hours, rejections and reclassifications, and raw material quantities used in each grade of board produced are shown.

A finished stock report sheet is kept for each grade of finished and semi-finished goods. The record sheet contains the details of production taken from the daily production report and also shipments made, so that it forms a perpetual inventory of finished stock.

Physical inventories of all classes of finished goods are taken at the end of the period. The inventory balances are reconciled to the ending balances shown on the perpetual inventories. The record sheets are totalled and the information they contain transferred to the "Summary of Production Report" (Exhibit I).

The daily production report is also used to record raw material quantities furnished to each board. The actual quantities used are compared to the standard quantities of raw materials required for the gross production attained.

A physical inventory of raw materials is taken at the end of each week's operations. Actual raw material consumption is then compared to consumption as reported by the beater room. This is an added control to detect clerical or manufacturing errors. To enable the check to be made, the cost department keeps a subsidiary record of raw material purchases in quantity only.

An actual physical inventory of raw materials is taken at the close of each month. The consumption for each grade is determined by first adding the month's receipts to the opening inventory and then deducting the closing physical inventory.

The consumption figures are reconciled to the total quantities of each grade used as recorded during the month. Differences are questioned and after any needed adjustments are made the totals are transferred to a report, "raw material consumption by commodity."

SHRINKAGE

Shrinkage is an industry term used to designate the material loss that occurs in converting raw materials to finished goods. It is an element hard to control and one having an important effect on raw material costs. Shrinkage is caused by many factors such as moisture content when the material was received, foreign matter contained in the bales of waste, and sewer losses.

Based on past experience, standard shrinkage has been accepted at 10%. Actual and standard calculations are made each time a physical inventory of raw materials is taken. Variations of 2% or more require explanations by the operating personnel.

REJECTED ROLLS AND MACHINE WASTE

Finished goods not found according to specification at the time of inspection are either reclassified or rejected. Goods reclassified remain in the finished goods inventory as a lower grade product. Rejected goods and waste are returned to the beaters to be re-used as raw material. The rejections are reclassified to raw material and reported as such on the beater room sheets when re-used. The finished goods are credited at a standard cost. These transactions will be discussed further in determining raw material costs of the period.

The general ledger control accounts reflect the total period costs with corresponding detail entered into the subsidiary ledgers. Production activity data accumulated during the period have been transferred to the proper report forms. The information is now available to the cost accountant, and it is his duty to supervise the preparation of the monthly reports and statements for presentation to management.

RAW MATERIAL COSTS

A subsidiary raw material ledger is maintained and controlled by general ledger account, cost of sales, raw material.

A separate sheet is kept for each grade listed in the detail codes of the chart of accounts. The following information is provided:

EXHIBIT I

THE CANADIAN PULP & PULPBOARD CO. LTD.

SUMMARY OF PRODUCTION AND COST

MONTH OF DECEMBER 19.....

No. 1 MACHINE	PRODUCTION				CONTINUOUS BEATER				REGULAR BEATERS				No. 1 MACHINE	
	Gross	Rejections	Net	Machine Rate	Tons Used	Direct Cost	Overhead	Total cost	Hours Operated	Direct Cost	Overhead	Total Cost	Hours Operated	Direct Cost
PRODUCT A														
PRODUCT B	142.5	1.9	140.6	2.99	129	459.30	258.13	717.43	103½	770.98	676.45	1,247.43	47¾	2,856.63
PRODUCT C														
PRODUCT D														
etc.														
TOTAL No. 1 MACHINE														
TOTAL No. 2 MACHINE														

No. 1 MACHINE	Overhead	Total Cost	Steam Cost	Finishing Cost	Reclass Loss	Direct	TOTAL CONVERSION		Per Ton	Total	Per Ton	Material Cost Per Ton	Shipping Cost Per Ton	Total Cost Per Ton
							Per ton	Overhead						
PRODUCT A														
PRODUCT B	1,721.09	4,577.72	1,295.48	192.95	182.78	5,758.12	40.95	2,455.67	17.46	8,213.79	58.41	34.90	1.82	95.13
PRODUCT C														
PRODUCT D														
etc.														
TOTAL No. 1 MACHINE														
TOTAL No. 2 MACHINE														

1. The opening inventory balance in quantity and value.
2. Detail of the monthly receipts as obtained from the voucher register.
3. Incoming freight charges.
4. The closing inventory balances provided by the physical inventory.

Consumption for the period is determined by adding freight and receipts to the opening inventory and then deducting the closing inventory balance. Unit quantities consumed are recorded on the report, "raw materials consumed by commodity" and allocated to the various products. Monetary values are transferred to the same report by the cost accountant and then reconciled to the control account. The total value of each grade of raw material used is prorated to the boards manufactured in proportion to the quantities used.

The form provides the total raw material cost for each grade of board manufactured. A credit allowance is deducted for waste returned to the beaters. The net product cost is divided by the tons of saleable production to arrive at the commodity raw material cost per ton. An immediate comparison is made between this cost and the standard raw material cost per ton for each grade of finished goods produced.

CONVERSION COSTS

General ledger account, cost of sales, 7213, is the control account for the manufacturing expense ledger. Separate costs are provided for each departmental cost centre showing details of expense as provided in the chart of accounts.

Expenses are kept on a cumulative basis for a period of one year. Those for the current month are transfered to a departmentalized manufacturing cost statement consisting of two sections, one for the operating departments and one for the overhead departments (Exhibit II A and B).

The costs charged to the indirect departments are distributed to the productive departments on an overhead distribution schedule. The distribution is made on the basis of a factor common to all productive departments using the service.

Service department costs (electric and steam power), including overhead allocated from the indirect departments, are applied to the productive departments on a special form on the basis of meter measurement.

DETERMINING COMMODITY COSTS

The summary of production report is a multi-columnar form with sections for each direct department extending from left to right across the top. Reference to the form will supply the pertinent data contained in each section (Exhibit I). The name of each grade of board manufactured during the period, beginning with those produced on #1 Machine, is listed down the left-hand side of the form. Units of production and operating data are already shown on the form as previously described.

Prior to the distribution of costs, steam costs are deducted to be included later as a separate unit of cost. The methods used to allocate productive department costs to the boards cannot be applied to steam. Steam is used in direct proportion to the gross production and is distributed on this basis. The bases of distribution to products are:

Continuous beaters—The costs are allocated to the various commodities according to the pounds of continuous beater stock consumed in each grade.

EXHIBIT II (A)

THE CANADIAN PULP & PULPBOARD CO. LIMITED

MANUFACTURING COST STATEMENT — PRODUCTIVE DEPARTMENT

DATE:.....

	15 Continuous Beater	16 Regular Beater	17 No. 1 Machine	18 No. 2 Machine	Finishing		20 Board Shipped	21 Size Manufacturing	Total Board
					Rolls	Sheets			
Direct Labor Clean Up Labor Maintenance Labor Overtime Labor									
Comp. Insurance Vacations Sick Leave Group Insurance									
Pension Unemployment Insurance Repairs Labor Repairs Material Manufacturing Supplies									
Skids and Covers Steel - Wire - Felts Grindstones									
Steam Power Electric Power									
Sub-Total Plant Overhead									
Total Cost									
Hours Operated									
Cost Per Hour									

EXHIBIT II (B)

THE CANADIAN PULP & PULPBOARD CO. LIMITED

MANUFACTURING COST STATEMENT — NON-PRODUCTIVE DEPARTMENTS DATE.....

	52 Diesel Electric	53 Yard Crane	54 Truck No. 1	55 Truck No. 2	56 Lab.	57 Mech. Over-head	58 General Plant		64 Stores	65 Plant Office	67 Goal Loader	68 First Aid	50 Electric Power	51 Steam Plant		Board Divi-sion
SALARIES																
Management and Staff																
Super'n Prod. Dept.																
Super'n Non.-Prod.Depts.																
HOURLY LABOUR																
Super'n Prod. Depts.																
Super'n Non-Prod. Depts.																
Direct Labor																
Clean Up																
Maintenance																
Overtime																
Comp. Insurance																
Vacation																
Sick Leave																
Group Insurance																
Pension																
Unemployment Insurance																
Repairs Labor																
Repairs Material																
Mfg. Supplies																
Telephone																
Telegraph																
Postage																
Sundry																
Travel																
Water, Land, Rent, etc.																
Dues and Subscriptions																
Professional Services																
Supper Money																
Medical Service																
Depreciation																
Insurance, Regular																
Taxes																
Total																

Regular beaters—The beater hours applied to each grade manufactured during the period are used to allocate regular beater costs.

#1 Machine—Machine hours required for the production of each grade form the basis for the distribution of machine costs.

#2 Machine—Applied in the same manner as #1 Machine.

Finishing—Finishing department costs are maintained separately for roll stock and sheet stock production. Finishing costs are slightly higher for the latter. Costs are pro-rated to the boards in accordance with the respective production of each type.

Steam costs—Steam costs are distributed to the boards according to the gross production of each grade.

The methods of treating reclassifications and rejections during the accounting period were discussed previously. Grades and quantities reclassified are recorded and the monthly totals entered on a report of reclassification.

Production reclassifications are always to a lower grade of product and, thus, a loss must be charged to the board originating the reclassification. The total loss incurred by a board is added as an additional conversion cost on the summary of production report.

THE COST OF GOODS MANUFACTURED

The addition of the reclassification loss completes the conversion costs and the total for each commodity can be determined by adding from left to right on the form. The commodity totals are divided by the net saleable production to evolve the conversion cost per ton of board produced. Raw material costs per ton are transcribed from the raw material consumption report.

Shipping costs per ton are added as the final step to provide the commodity manufacturing cost.

The total of the manufacturing costs of all the commodities represents the cost of goods manufactured during the period.

THE COST OF GOODS SOLD

To determine the cost of goods sold during the period, the differences in the opening and closing finished goods inventory balances must be considered. The balances are recorded in the finished goods subsidiary ledger and the information is transferred to the general ledger accounts by journal entry. With the inclusion of this entry, the five general ledger cost of sales accounts now reflect the total cost of goods manufactured and sold during the period. The cost of sales for each commodity can be ascertained from the information available in the finished goods ledger.

CONCLUSION

The use of standards as memorandum costs is common practice in the paper and paperboard industry. Actual costs are readily attainable and the process costing methods are well suited to this type of uniform process.

Budgetary control is exercised with a fixed budget in use. It would be difficult to justify the additional effort to produce a flexible budget under the present conditions of continued high activity.

There is, however, a belief held by some accountants that the installation of a complete standard cost system would provide management with more comprehensive data, and also provide a solution to other problems of the industry. The management

of Can-Pulp Limited feel they have been able to solve such problems within the framework of the actual cost system in use. The lost time encountered on a paperboard machine is one problem. The breaking of a wire or the tearing of a felt will force a machine shut-down. Usually an actual cost system charges this down-time loss to the product being manufactured at the time the loss occurs. Obviously, the product is not responsible for the shut-down. Each time a paperboard machine starts operation a similar time loss occurs before an acceptable product is produced.

Again, if machine time is charged directly to the product, an abnormal loss is incurred. The inclusion of this charge in the cost of the product distorts the information available and makes future comparisons unreliable.

A standard cost system would isolate as variances both of the excess cost conditions described above.

The problems were solved at Can-Pulp Limited in the following manner.

Start-up time and abnormal shut-down times are isolated during the accounting period. No direct charge is made to a commodity. At the end of the accounting period, the start-up and abnormal time loss for each machine is pro-rated over all grades manufactured on the machine in accordance with the actual machine time accrued to each product.

The solutions to these problems are adequate and, under present conditions, the costing plan in use furnishes management with all the information necessary to administer the enterprise successfully. This opinion might alter should future conditions change. The writer believes that an extension in the use of standards during the accounting period would prove beneficial and that a gradual approach to a complete standard cost system might will receive consideration.

REPORTS

The preceding discussion contained many references to the various reports that are prepared during and at the close of the month. Reports provide management with the information necessary for control and future planning. When reports are being prepared, three questions should be kept in mind:—(1) Does the person receiving the report really want it? In many cases a report is requested once and then automatically continued. (2) Does the report serve fully the use for which it is intended? A slight change in presentation can very often improve the report. (3) Does the report justify the cost of its preparation?

The above questions are often difficult to answer and sometimes can be answered only when viewed in specific circumstances. It is established policy that all reports receive a periodic review.

The reports are listed individually with uniform detail in order to eliminate lengthy descriptions. The list includes some period cost reports and other reports having control features.

DAILY REPORTS

1. Daily report of production

Prepared by:—The production (cost) department

Contents:—Daily and month-to-date totals of the actual production and actual machine hours by commodity. Standard production for the machine hours attained.

Supplied to:—Operating supervisory personnel
The plant superintendent

Purpose:—The report permits immediate action by revealing any undue variance.

2. Cash position

Prepared by:—Utility clerk

Contents:—The opening and closing bank balances, deposits and withdrawals. Prepared for all bank accounts.

Supplied to:—Resident manager

Purpose:—To check cash reserves for known budgeted expenses and to ensure that full advantage is taken of cash discounts.

WEEKLY REPORTS

3. Raw material inventories and consumption report

Prepared by:—The production (cost) department

Contents:—The weekly physical inventory of raw materials and supplies. A comparison of the actual raw materials reported consumed by the beater room, and the actual consumption as shown by the inventory.

Supplied to:—Operating supervisory personnel
The purchasing agent
Resident manager and plant superintendent

Purpose:—To check quickly errors made in reporting raw material consumption. Also provides the purchasing agent with information to avoid raw material shortages due to changes in production furnish or product mix.

4. Report of plant operations

Prepared by:—Production (cost) department

Contents:—Shows weekly, year-to-date, and last year-to-date totals of net production, machine hours, production rate per hour and per day. Also includes production, shipments, and weekly ending stock balances by product division.

Supplied to:—Parent corporation
Resident manager and plant superintendent

Purpose:—To provide top management with an over-all picture of present manufacturing and sales trends as compared to previous year. The inclusion of hours and machine rates shows increased or decreased efficiency.

MONTHLY REPORTS

5. Manufacturing cost statement

Prepared by:—Cost accountant and assistants

Contents:—This statement is first used in the preparation of departmental costs. It is then completed to include departmental production, operating hours, cost per ton by departmental expense detail, and departmental cost per operating hour. Also includes the expense cost per ton for the entire product division.

Supplied to:—President
Resident manager and plant superintendent
Cost accountant

Purpose:—This statement is identical to the one used in the preparation of departmental standard costs. The two together give a comprehensive detail of all expenses and operating efficiency in every department.

6. Commodity cost report

Prepared by:—Cost department

Contents:—Performance and cost data, actual and standard for each commodity.
Supplied to:—President, resident manager
Plant superintendent
Sales manager
Cost accountant

Purpose:—This report shows actual performance for each commodity and compares it to standard.

7. Commodity profit and loss statement
Prepared by:—Cost accountant
Contents:—The tons shipped as well as sales values and gross profit are shown for each commodity. This provides the information for determining the average selling price, cost and gross profit per ton, as well as percent of gross profit to the net sales.
Supplied to:—Resident manager
Sales manager
Cost accountant

Purpose:—To show the amount supplied by each commodity to the gross profit margin.

8. Over-under raw material consumption
Prepared by:—Cost accountant
Contents:—This report is prepared in units only. Standard raw materials required by grades compared to the actual raw materials consumed in each board produced. The total quantities of actual and standard raw materials used and the variances.
Purpose:—This is the raw material report of volume variances as they pertain to the total consumption in each commodity. It is to show savings or added costs revealed in the substitution of lower or higher priced goods in the furnish.
Supplied to:—Resident manager
Plant superintendent
Chemical engineer

9. Analysis of raw material variances
Prepared by:—The cost accountant
Contents:—A breakdown by grades, of raw material variances into price variance or quantity variance
Supplied to:—Resident manager
Plant superintendent
Chemical engineer

Purpose:—This is a control report showing the total cost variance and variance cause for each raw material

10. Comparative inventory values
Prepared by:—Cost department
Contents:—A dollar value for all inventory classes
Supplied to:—Resident manager
Purpose:—An over-all guide to control investments in inventories

11. Summary of selling expenses
Prepared by:—General ledger clerk

Contents:—This form is included to show the kind of form used to control various expense types. Budget and actual expenses are compared.

Supplied to:—Sales manager Salesmen

Purpose:—An example of control. Budget and actual differences are brought to the attention of the person involved in establishing the budget.

12. Labor force analysis

Prepared by:—Time-keeping department

Contents:—Showing separately for salaried and hourly employees, the average number working in each department and changes occurring during the period.

Supplied to:—Resident manager Plant superintendent

Purpose:—A general control check of the labor requirements

13. The analysis of costs

Prepared by:—The cost accountant

Contents:—This is the most comprehensive and detailed report produced. It is in the form of a personal letter and is a complete analysis of the activity of the period. All departmental cost details and production figures for the current period are shown. These are compared to the same figures for the preceding six months and to the standard.

Supplied to:—Resident manager Chemical engineer
Plant superintendent Operating supervisors
Sales manager

Purpose:—Many reports could be made from the information in this letter. The cost accountant covers each phase of the manufacturing period in a separate analysis. A variation or change is noted and a brief explanation to reveal the underlying cause is given. Any trends or particular items which the cost accountant believes should be brought to the attention of management are stated.

A personal letter from an experienced person, pointing out the important cost changes and the reasons for such changes is more beneficial to a busy executive than a series of statistical reports.

14. Quarterly analysis of accounts receivable

Prepared by:—Accounts receivable department

Contents:—Customers' names and amounts due are listed in individual columns under the following headings: Accounts 1-30 days past due; 31-60 days past due; 60-90 days past due; over 90 days. The subsequent date when payment is received is noted.

Purpose:—To show the average "ageing" of the receivables and to assure that attention is given to accounts unpaid.

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Editorial Comment . . .

Uniform Costing

IN THESE DAYS of ever-changing methods and the ever-increasing business tempo, together with its demand for more and more information about costs, statistics and other pertinent data, the term "uniform costing" presents itself as something of a challenge.

It we can accept the definition of uniform costing as "The use by two or more units of the same costing practices and/or principles", then we may put to good use the benefits that can be derived from adopting such a system among our industries in Canada.

Since the last world war, great strides have been made in the methods of presenting costs but at present there does not appear to be very much uniformity in the methods used. Proponents of costing uniformity may surely feel that we are lacking as a professional body of cost accountants in not being able to suggest ways and methods of introducing costing practices into various places of our business life.

While there may be fewer trade associations in this country than in the United States and Britain, one would have thought that more progress could have been made in providing individual enterprises with the means of producing comparable statistics, efficiencies and economies. Of course, there are always those who would say that company secrets would be disclosed, but should there be secrets in trade associations?

Let us also think of the local municipalities and hospital boards who must often wonder if the services they provide are justified by the costs incurred. By what better means than a uniform system of costing could this be disclosed in comparison with kindred bodies? The people responsible for running these public organizations have recognized the need for cooperation in solving problems of administration and control and, through such bodies as the Canadian Hospital Association and the Canadian Federation of Mayors and Municipalities, concerted effort is given to the solution of common problems.

Then there are the larger companies with multiple plants and departments. Surely there are many excellent reasons for uniformity of costing practices in such organizations which provide comparable details in respect to costs, efficiencies and sales statistics.

A progressive step would seem to indicate the need for basic agreement on costing terminology. Members of our Society can play a major role in this respect and, indeed, have a great deal of talent to offer in the way of terms used and understood. Certainly it seems reasonable that all levels of management should understand that direct labor can mean the same as productive labor, or that burden and overhead are comparable, whereas operating expense can have a variety of meanings, depending upon whether you are engaged in manufacturing, sales or administration.

The adoption of uniform accounting practices is a worthy challenge to the skill of the industrial accountant, particularly to those whose responsibility it is, or could be, to advise and/or operate such systems within the framework of their respective organizations. To overcome the problems of different wage contracts, plant layout conditions, location of plants, resistance to change, keeping information confidential, to mention but a few, is indeed a challenge of sufficient meat to whet our appetites.

Further discussion, however, on the merits or otherwise of uniform costing practices seems to be out of place until some progressive steps are taken. The question is who will take them? First, there must be agreement on principles supported by the best authorities available. Secondly, investigation must be undertaken, with the help and cooperation of trade associations that have such systems in operation, to establish how far uniformity exists. Thirdly, when such a system is adopted, controls must be established to prevent modifications by participating organizations that might destroy the effectiveness of the system.

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ECONOMIC INDICATORS: HOW TO USE THEM IN BUSINESS FORECASTING*

By W. Allan Beckett,
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Evaluating and forecasting business performance is one of the most important areas for marketing and accounting co-operation. This article demonstrates how economic indicators can be used by accountants and marketing men to predict business trends and performance at three levels of activity—the nation as a whole, the industry in particular, and the companies within that industry.

THERE is probably no area where the accounting and marketing functions come closer together than in the area of evaluating business performance and attempting to forecast it. Possibly I should say there is no area where it is more important to combine the functions of accounting and marketing than in the assessment of current performance and the prediction of future performance.

In the course of my discussion, I hope to indicate how accounting and marketing can, together, contribute towards successful forecasting at three levels of activity. I shall try to show, first, how and why one forecasts national business conditions through the use of certain indicators. Second, we shall look at the techniques of predicting industrial trends as part of the nation's business. Finally, I shall try to illustrate procedures for company planning within the industrial and national complex.

Let me at the outset say two things about the forecasting problem in general. First, it is inevitable. Everything we do, either as individuals or as agents for our companies, dictates that we have a view of the future before we can take decisive action. Second, and because forecasting is an inherent and inevitable process, it is essential that we apply scientific techniques to forecasting. It is just not good enough to apply in a general way the lessons of past experience or to operate by rule of thumb. We must make our view of the future explicit and, if possible, quantitative. Basically, we must try to measure uncertainty. In terms of correlating accounting and marketing, this means bringing together the best information from both areas.

*A paper given at the Annual Conference of the Society of Industrial and Cost Accountants of Ontario held in London, Ontario, in October 1959.

Well known to *Cost and Management* readers through his regular feature "The Economic Scene", the author is Associate Professor at the University of Toronto's Institute of Business Administration and a Director of the business consulting firm of General Research Associates Limited. Born in Toronto, he was educated at the University of Toronto, receiving a B.A. in Political Science and Economics in 1948 and a Master's degree in Economics the following year. He was formerly Director of Research with the Department of Labor of the Province of Saskatchewan (1950-52) and following that was an economist with the Forecast Section, Economics Branch, Department of Trade and Commerce, Ottawa.

MEASURING THE NATION'S BUSINESS

Let us look first at the application of these principles in terms of predicting national business activity. It is not without significance that our methods of measuring and assessing performance and of predicting future conditions for the nation are put in terms of national accounts. There are two ways of measuring the total business activity of the nation. First, and this is also a marketing viewpoint, we can measure the total spending of all Canadians as individuals, as businesses, and as governments on final goods and services. This concept, the demand or marketing side, we refer to as the Gross National Expenditure. Second, we can measure the total flow of economic activity from the production viewpoint and this is, in part, an accounting function. We add up the total payments to the agents who create our total final output and we refer to this as the Gross National Product.

In forecasting the nation's business, we make use of the accounting identity that the total production must equal the total consumption. Marketing people are, of course, most interested in the demand side, trying to predict what consumers, businesses and governments will spend. The accountant may be more concerned with the cost of producing the accompanying volume of output. But the forecaster will have to look at both sides.

A key determinant of total demand is business spending for new plant and equipment and for inventories. We use a variety of indicators to predict this part of G.N.E. One method, and one employed by the Federal Government, is to ask business what it plans to spend. From this survey of investment intentions it is possible to assess the feedback demand on productive services. We should note that the marketing people should have prepared good sales forecasts on which to base plant and equipment requirements and that the accountants should have done a good costing job to provide the estimate of spending. As a matter of fact these surveys have proved to be a valuable forecasting instrument, a testimony to good marketing, good accounting or both.

There are other indicators that we can use to check the survey intentions. These, too, emanate from the company records. Individual reports are totalled to give us measures of new orders placed for equipment and contracts awarded for construction. From the accounting source, then, come data that the marketing group can use, not only to forecast an important segment of the nation's business, but also to predict particular industry trends. In similar fashion, we can use government budget data to predict government spending.

Consumer spending can be derived from independent predictions of income and of credit conditions. All this, of course, is an aggregate approach and one that requires cross-checking with an industry forecast. Before I turn to that area, however, let me outline another approach to the use of indicators for forecasting the nation's activity.

For purposes of short-run economic forecasting, that is, looking ahead a year or so, the expenditure analysis can be effectively supplemented by the use of leading indicators. I have already referred to two of these as independent checks on the survey technique, new orders and contracts awarded. Experience shows us that other measures provide advance indications of changes in the direction of general business activity.

The stock market is a good barometer of coming changes. The number of business

failures typically rises in advance of an overall business decline. Similarly new business incorporations taper off as a boom matures.

Prices of basic industrial commodities are sensitive to waves of prosperity and decline. The average work week usually rises and falls ahead of changes in employment.

It has been determined that this group of indicators will precede changes in production and employment by anywhere from four to twelve months and they help us to anticipate changes in the demand and supply situation as measured in the flow of the G.N.E. and G.N.P.

USING INDICATORS AS FORECASTING AIDS

There are three specific points to keep in mind when using these indicators as forecasting aids. First, they must be corrected for seasonal changes. Most measures of business performance are a composite of seasonal ups and downs that take place every year and cyclical ups and downs that occur over the space of three or four years and sometimes longer. It is the cycles that are important in forecasting, and these cannot be clearly distinguished unless the seasonal variations are measured and removed. It is impossible, on the basis of seasonally unadjusted data, to determine accurately what recent, and possible future, trends really mean.

Second, the leading indicators must be used as a group. No single measure can serve as an accurate forecasting device. Sometimes the leading indicators move together, at other times they move divergently. A consensus must be established which suggests a continuation, or alternatively a reversal, in the underlying direction of business activity.

Third, a useful method of combining indicators into a consensus for forecasting purposes is the diffusion technique. A diffusion index measures simply the proportion or percentage of indicators that are rising and falling at any given time. Since a growth rate usually slackens before it swerves into a decline (and since a decrease usually slows before it turns into a rise) the proportion of activities rising and falling, expressed as a continuous percentage index, traces out an unseen cycle that leads general business cycles by six to twelve months.

Since these applications, seasonal adjustments, timing measures, and diffusion indexes can now be performed inexpensively on electronic computers, they are available for forecasting purposes at the industry and company level as well as for the national economy.

USING INDICATORS IN INDUSTRIAL FORECASTING

Turning to the industry picture—just as it is feasible to construct a forecast model for the nation, based on economic structure, the timing among indicators, and diffusion indexes—so it is reasonable to construct a similar predictive vehicle for a given industry. The prior step, of course, is the national forecast which provides a framework for the industry prediction. While there are many examples that might be chosen, housing is an industry that lends itself readily to the technique. We may note from our review of major demand sectors that housing has tended to move counter to the general business cycle in recent years. This gives us a rough approximation of how national trends might be expected to influence a particular industry.

The next step is to determine the variables that influence the demand for houses,

and which might affect the supply. Correlation techniques can be applied to select and weight the appropriate variables. For example, housing demand is a function of population change, especially family formation, population movements, incomes, credit conditions, and government policies. At times, factors such as the supply of serviced land or the capacity of the industry might affect the supply side of the housing market. The forecast procedure then is to select indicators that measure these variables, project the indicators themselves, and derive a forecast of housing demand and supply.

A second, and supplemental, approach is to develop leading indicators or advance indications of housing construction. Some of these include applications for and approvals of mortgages under the National Housing Act. Statistics are available on the value of contracts placed for new housing. Records are kept of building permits, and of housing starts. These measures all precede the peak of on-site production of houses and permit the forecasting of work put in place and the subsequent number of completions by some four to six months.

USING INDICATORS IN COMPANY FORECASTING

As we move to the company level, the problem is one of translating national and industry forecasts into meaningful market potential for the individual enterprise. Given forecasts of national business activity and a prediction of housing volume, the building material supplier can determine his market potential. From a study of trends and qualitative knowledge, he can work out his company's share. This becomes initially a guide to the setting of policy. That is to say, a company forecast based on a study of the external factors must be transformed into a target or plan in accordance with internal company considerations. It must be re-expressed as a sales quota, a production schedule, a budget and so forth in the light of company circumstances. Sales force predictions may be collected as a check on the external forecast.

CONCLUSION

In forecasting at all three levels of activity, there is a feedback process which reveals a hidden area of co-operation between marketing and accounting. Much, if not all, of the external data that marketing uses for current analysis and forecasting comes originally from the accounting and other records of business enterprises, households and governments. The more accurate the individual records, the more accurate are the industry and national indicators—and obviously the better are the forecasts.

At the same time, the translation of externally developed forecasts into company goals requires the careful pencil of the accountant. The final operating forecast has to be a joint product of the marketing and accounting function if it is to be a realistic guide to action and control.

For further reading

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KEY MEASUREMENT OF THE CANADIAN ECONOMY, R. B. Crozier, Canadian Chartered Accountant, Jan. 1958.

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The Economic SCENE . . .

by W. Allan Beckett

THE OUTLOOK FOR CAPITAL SPENDING

SPENDING on new capital formation by all sectors of the Canadian economy is expected to rise by 4% in 1960. According to the survey *Private and Public Investment in Canada,* just released by the Department of Trade and Commerce in Ottawa, new investment in plant and equipment and housing will rise from $8.4 billion in 1959 to $8.8 billion in 1960.

This survey of capital spending intentions, which is based on year-end returns from some 18,000 establishments covering every industrial sector, provides useful advance indications of the coming level of construction and related activity. Detailed information is presented of anticipated expenditures by industry. These are cross-classified by type of expenditure, covering both construction and machinery, and capital and repair work. A later supplement provides additional information on regional spending.

Anticipatory data on new capital formation are important for assessing the general health of the nation, since investment is the dynamic factor that determines the level of total output. Investment dollars are income-creating dollars and generate secondary demands for a wide range of goods and services. The industrial and regional detail assists suppliers to analyze and forecast the market for construction materials and to plan production schedules.

The $359 million increase in capital spending this year will be accounted for mostly by private business. Housing construction will be down despite a fairly large carry-over of units under construction at the beginning of the year. Government capital spending will be little changed, as declines at the federal level are offset by increases in municipal undertakings. A large part of the total increase in capital spending will represent new purchases of machinery and equipment, with a lesser increase going into the construction of new plant. This indicates a greater concern with the improvement of existing facilities than with the extension of new capacity.

By industry, significant increases will take place in manufacturing, particularly for new machinery and equipment; in mining construction; and in institutional costruction. Lesser increases are expected in government, agriculture and fishing, trade, finance and commercial services. Utilities, a large proportion of total spending, will be little changed, and housing will show some decline.

The extent to which the survey intentions will be realized depends on a number of economic factors. In the past, the intentions have been a reasonably good guide, with a slight tendency for actual expenditures to exceed original intentions in an expanding economic climate.

Usually, new programs are added during the year and existing plans are revised upwards when markets are strong. New contracts awarded in the first two months of 1960 established peak levels, somewhat higher than the year-end rate. New orders for machinery and equipment are running about 20% ahead of a year ago. This indicates the possibility of an upward revision in spending at least during the early part of the year.

Both supplies of labor and materials appear adequate to carry out the existing intentions and any forseeable upwards scaling. One possible limiting factor is the availability of capital. Money has been relatively scarce, and certainly expensive, during most of the current expansion. Some firms may find difficulty in financing their programs if they have to resort to borrowing of any extent. At the same time, the liquid holdings of many firms seem adequate to finance not only the requirements of their capital programs but also their need for funds to finance taxes, inventories and receivables. This may require that corporations sell off some of their holdings of short-term securities, a development that will be analyzed in detail in the next *Economic Scene*.

It is also necessary to assess the investment program for 1960 in terms of its historical perspective. In current dollars, the program is just above the previous peak of 1957. However, when allowances are made for intervening price changes, the real level of new capital formation will be considerably below the earlier peak. This means we have a smaller program relative to our capacity to create new capital. Moreover, the current program will represent a smaller proportion of total output and will generate less steam for the economy as a whole.

At the same time, the supply of labor is beginning to grow more rapidly. Other things being equal, economic theory tells us that the supplies of plentiful productive factors are substituted for supplies of scarce factors. The slower rate of growth in real capital that we have begun to experience may well continue for a number of years. The implications are clear: a slower rate of general economic growth and a less inflationary one; slower increase in productivity as well as in production: the substitution of labor for capital; relatively smaller returns to labor and relatively larger returns to capital.

It may well be that we have passed the peak of the post-war investment boom. While the Canadian economy is currently experiencing a 'boomlet', we may expect cyclical expansion to be less pronounced and less enduring in the years ahead. Recessionary periods are likely to be more pronounced and extended than those to which we have become accustomed.

PERSONALS

N. L. FERRIES, C.P.A., R.I.A., of Crown Cork and Seal Company, Limited, Toronto has been appointed Treasurer of the company in addition to the office of Secretary which he now holds.

C. BRIAN DANBY, M.A., of the Victoria Chapter, has been named Director of Finance and Budget of the B.C. Power Commission. With the Commission since 1950, Mr. Danby was formerly Assistant Director of Finance. In his new position, he will be responsible for provision of funds for operations and development; co-ordination of budgets, receipts and disbursements and data processing.

J. C. K. FEILDEN of the Victoria Chapter, has been appointed Assistant to the Controller and to the Director of Finance and Budget of the B.C. Power Commission. Formerly Supervisor of the Treasury Division, Mr. Feilden has been with the Commission since 1945.

The Editor's Choice

INFLATION AND COMPANY FINANCE
R. Mathews, Accounting Review, Jan. 1960

This article discusses the fundamental issues involved in the controversial question of reflecting the effects of inflation in financial statements. Mr. Mathews supports the view that inflationary effects should be considered in our accounting. He reviews the experience of Australian companies in post-war years. He concludes by saying, "To maintain financial stability as well as a satisfactory level of profits and incomes, it is thus necessary, first, to adopt a policy of current-cost pricing and second, to base tax and dividend distributions on current incomes rather than accounting profits."

HOW AN ELECTRONICS MANUFACTURER SHARPENED COST RESPONSIBILITIES
T. S. Dudick, The Controller, Feb. 1960.

This is a factual article on the action taken by a company that found its activities too varied for its financial strength. The author, as budget director, gives a first-hand account of how a comprehensive study was made of the problem, and how the company was re-organized into distinct groups responsible for performance and cost. The commentary is supported by excellent exhibits on budgets.

ACCOUNTING AND OPERATIONS RESEARCH
F. Edelman, N.A.A. Bulletin, Feb. 1960.

This is a provocative article. The author defines operations research and what its objectives are in clear terms. He states that "the accounting department is in a very real sense the main artery through which information flows to management." Then the author takes us through the analysis of a distribution cost problem from the standard accounting technique and then from the supposedly "ignorant" approach which certainly will be a forward-looking lesson for most accountants. The results of this experiment are not so important to the accountant in that they give concrete facts for management decisions, but they illustrate the fact that present accounting reports may lead to completely wrong decisions. This seems to point up areas in which accounting is in need of some radical modernizing if it is to fill a current need.

ORGANIZED LABOR'S ANSWER TO INTERNATIONAL COMPETITION
B. Seidman, Advanced Management, Feb. 1960.

The author is an economist for the AFL-CIO group and also chairman of a labor advisory committee to the U.S. government. He states that the U.S. is not primarily competing with Russia in the world markets but is competing instead with the countries that it helped to rebuild, and that much of this competition is at home. He denies the statement that labor costs are making the U.S. non-competitive and reviews the performance of other countries with wage controls. He reviews the relative importance of trade to the U.S., and states that the biggest factor in growth is the internal mass purchasing power. From the importance of the domestic consumer market, he states that these domestic economic policies should not be tailored to meet the foreign trade position of the moment. While Mr. Seidman recognizes a problem, he keeps it to size and states well the responsibility of many groups in meeting the challenge.

THE SALES FORECAST – BASIS FOR BUSINESS PLANNING AND BUDGETING*

By R. K. Porter,
Executive Vice-President,
Thomas J. Lipton, Limited,
Toronto, Ontario.

The company which practises careful planning and control can achieve outstanding results as evidenced by the experience of this company which in 1958 ranked 362nd in the U.S. in sales, 451st in invested capital and 28th in profit as a per cent of invested capital. Drawing upon the successful practices of his company, the author relates the sales forecast to the specific problems of business planning, budgeting and control within the framework of a corporate structure.

THOMAS J. LIPTON, LIMITED is a wholly-owned subsidiary of Thomas J. Lipton, Incorporated, Hoboken, New Jersey. This latter is, in turn, a wholly-owned subsidiary of Unilever. We do not publish public statements concerning our Canadian operation; these are, in each instance, consolidated in the results of our parent company. Suffice it to say, however, that our contribution to the volume, profits etc. of the American company follows very closely in the normal ratio to be expected as a result of the comparative sizes of the two countries.

We are in the business of supplying packaged food products to the consumer. Tea is one of our important products, though it has been over-shadowed in Canada in the last decade by the development of our dry soup mix business. This has, in turn, been followed by our parent company's acquisition of a liquid salad dressing business. The salad dressing products are now being introduced in Canada.

The total employment is about 3,000. We have sales offices in the principal cities of Canada and the United States and operate with a large sales force which sells to chains, wholesalers and in some areas, direct to the smaller retail outlets.

Dollar volume has risen from about $8,000,000 in 1939 to $110,000,000 in 1959, and net profit from $160,000 to almost $7,000,000. A supplement in the July 1958 issue of *Fortune* listed the 500 largest companies in the United States. Lipton ranked

*A paper given at the Annual Conference of the Society of Industrial and Cost Accountants of Ontario held in London, Ontario, in October 1959.

A native of Medicine Hat, Alberta, and a Commerce graduate of the University of British Columbia, the author has had a varied business career. He has held executive sales and general management positions with Lever Brothers Limited in Vancouver and Toronto, Pepsodent Company of Canada Limited, Toronto, and Harriett Hubbard Ayer companies in Montreal and New York. During the war, he served as an R.C.A.S.C. captain in England and Northwestern Europe and, at war's end, was staff officer of Seventh Brigade headquarters. At present Executive Vice-President of Thomas J. Lipton, Limited, he is a member of the Toronto Board of Trade and of several other clubs and organizations.

362nd in sales, 451st in invested capital and 28th in profit as a per cent of invested capital. This latter showing, I think you will agree, is an outstanding performance.

WHAT ARE THE PURPOSES OF PLANNING AND CONTROL?

First — to insure a profitable operation consistent with long-term growth, and in accordance with corporate policies.
Second — to keep the finances of the business in sound condition.
Third — to report on performance as against the budget.
Fourth — to explain and account for variations.

OPERATING BUDGET—OR ANNUAL PLAN

The first planning tool is the operating budget. At Lipton, our philosophy on budgeting is that it is a goal to be achieved, rather than a star to shoot at. We believe in fair and reasonable expectations. Once the budget is set it is never changed unless a very unusual situation arises . . . such, for instance, as the acquisition of a new company . . . and all later comparisons are made against the original budget. We do make, however, a revised estimate of profits after the end of each quarter, which takes into account the actual results for the period to date and a new estimate for the balance of the year. This keeps us currently informed on how we expect to fare as against our original plan . . . although the original budget still remains our basic objective.

In August of each year, we commence preparation of a preliminary operating plan for the following year. At Thomas J. Lipton, Limited, we make use of what is called the "Product Manager System." Our product managers are very close to being independent business men. They are assigned a product, or group of products, for which they have complete responsibility.

So then, in our business, the product manager is the control centre from the marketing point of view, of the budgeting and planning process. I might repeat here an observation made by a member, unknown to me, of your profession.

"To have a successful system for budget planning and control, it is necessary to have a logically arranged company organization, and a clear definition of responsibilities.

"Budgeting not only implies a thoughtful and detailed look into the future, but also means that differences between budget and actual will be looked into and evaluated, and that action will be taken on them. To make this possible, a clear definition of duties is essential, and so is a clear cut line of authority."

Now to outline the steps that are followed in the preparation of a budget at our company.

This foreword appears on the first page of our *Annual Plan Book*—

"The annual plan for the year 1960 is intended to provide senior management with all basic organizational, marketing, manufacturing and financial facts, essential to the efficient conduct of business.

"The Plan will be reviewed to include current sales volume and financial estimates and marketing plan revisions with the closing of March, June and September quarters. It will be re-published in the fall, for the year 1961."

The following section is entitled "Economic Review", which is in turn followed by a brief summary of some of the important trends of key indicators.

Next in our *Annual Plan Book* is a brief general statement outlining the current position of Lipton products in the field.

For instance, our statement re Soup tells the number of varieties being marketed, new product introduction planned in 1960, the share of the market held by our products and that of our major competitors, and figures on per capita consumption.

Similar statements are made for the company's other products.

These facts, information and statements are our general frames of reference for the marketing plan that follows.

The next section of our *Annual Plan Book* is entitled "Marketing Plans." The first page of this section is entitled—

Summary—All Products
Statement of Profit and Loss

Actual 1958		Budget 1959		Estimate 1959		Estimate 1960	
$	%	$	%	$	%	$	%

The first column gives the actual results for the year 1958; the next, budget 1959; on the right our latest estimate for the year 1959; and in the last column, proposed budget for 1960. We have recently changed our system somewhat and will add one more column, for the year 1961.

This statement of profit and loss lists each item in dollars and also as a percent of net dollar sales.

This one piece of paper is the summation of all of our plans. Its major purpose is to show what profit result can be expected if our plans for the year are accomplished.

Obviously then, we must examine the plan in order to make an intelligent appraisal of the reasonableness of our objectives.

So the next step in our *Annual Plan Book* is to present in summary form the details of our operating plan.

We use the same time periods here again. The year 1958, budget 1959, latest estimate 1959, year 1960 and still to be added year '61.

There we outline—

Sales Volume—Tonnage
Sales Value—Dollars
Selling Expense
Advertising Expense
Sales Promotion
Marketing Allowances

This summary page gives in short form the summation in dollars and cents of the marketing plans that follow.

The marketing plan is then presented in detail for each product.

Let us take one product and see the steps involved.

Once more, in this product section, we present a statement of trading profit and loss for the same time periods mentioned previously. We then summarize the dollars and cents of the marketing plan itself for this product.

Then we follow these summaries with a concise statement of the marketing plans that are designed to produce our stated objectives.

COMPETITIVE POSITION

Total Market
Lipton Position
Lipton Factory Shipments
Breakout of Sales between Regions
(Lipton vs. Total Soup)
Lipton Market Share
all Canada and by region
Important variations are explained at this point.
Brand shares of most important (to us) flavors.

COMPETITION

Market Shares
Growth Indices
Measurable Advertising Expense
and a general statement of competitive marketing practices.

We have our reference material established and we state now our volume objectives for each flavor in this product group. Once again for the same time periods and, in this instance, we indicate the trends by including a percent increase or decrease figure for each flavor.

Then a short statement supporting the reasoning behind the stated volume objectives.

Next we present the advertising and sales promotion plan which is deemed necessary to produce these stated volume objectives.

We make a short statement giving our objectives for advertising and promotion—and follow that with what is commonly called a copy platform. In our business this latter step is done in two sections, one for English-Speaking Canada and one for French-Speaking Canada—mere translation of English copy is not acceptable!

Then we discuss what media our message will be carried in and what form our promotions will take. This section is concluded with a diagrammatic calendar indicating the scheduling of the planned activities.

The same plan is followed for each of our product groups.

The next section of our *Annual Plan Book* deals largely with the indirect expenses that will be incurred in the operation of our plan.

The heading we use for these expense items is entitled "Indirect Expenses"—

There we list in detail—

A. *Selling Expenses*
by the same time periods as before and a section here is included on personnel—as to numbers—and role. Any other matter considered significant in relation to the budget for selling expense is commented on at this stage.

B. *Administration Expense*

C. *Market Research Expense*

D. *Product Research Expense*
and
E. *Employee Welfare Expense*

The next section is entitled "Capital Expenditures and Cash Forecast" which will be discussed in more detail further on. In this section we provide for the capital tools required to make possible the production of our planned volume. We also indicate our cash position by showing our bank balance at the beginning of the year, list our planned receipts together with any planned sale of fixed assets and receipts from investment interest.

We show what we plan to pay for materials and expenses, what capital investment is to be made, tax liability and planned investments. We know then what our ending balance should be. We also, for convenience, list our portfolio of investments on this schedule.

We have now completed the steps taken in the preparation of an annual budget for the forthcoming year.

There is however, one more very important step that we take at Lipton—we now prepare our Five Year Plan.

More of the same steps are followed in the preparation of this plan. Our product manager considers all of the information available—and pays perhaps more attention this time to long-run trend indicators—and we present the information once more in much the same fashion.

A profit and loss summary forecast for all products for each year of the plan.

A trading profit and loss statement for each product group for each year of the plan.

Written justification of volume projections by product groups and for major expense items.

Once this has been done, we have completed our annual budget and have established a frame of reference for the future.

CAPITAL EXPENDITURE BUDGET

The next planning tool is the capital expenditure budget. The purpose of forecasting probable expenditures on capital account is to ensure that the complete program for the ensuing year is properly linked with the financial resources available, and to control such expenditures through review in advance of the economic need and justification of each project proposed.

In August of each year, we request all operating departments to submit the details of their capital expenditure requirements for the following year. We advise them that new capital proposals should only be put forward when the net return on capital invested makes them exceptionally attractive. The instructions with regard to the submission of capital proposals follow:

(1) All proposals of $15,000 or more must be submitted on separate sheets along with a complete description and justification. (A form is provided for this purpose.) Estimated savings or profits which will accrue from the proposal should

be included. These savings must be substantial and should result only from savings realized from actual cash outlays, such as:

Savings in wages due to reduction in number of employees.

Savings in fuel consumption.

Savings in power consumption.

Savings in repair and maintenance costs.

Savings in freight and handling charges.

Savings in lower cost of bulk materials.

(2) For expenditures of over $1,000 but less than $15,000, one form may be used with a successive listing of the items and an explanation of the need therefor and the savings arising therefrom set forth immediately underneath each item.

(3) Expenditures under $1,000 may be successively listed on the form without comment or a minimum comment where deemed necessary.

(4) Proposals for additional equipment should be segregated from proposals for replacements. A complete description of the equipment being replaced should be given.

(5) The budget should include only those projects which are reasonably sure to come up for consideration during the budget year. Projects which have not reached a definite stage of development but which may come into our picture next year, should be outlined in a separate memo.

Of course, items do come up each year which cannot be justified from a return-on-investment point of view, but are designed to improve working conditions or enhance employee morale . . . such, for instance, as air-conditioning of an office area, or improving rest room facilities. These are judged on their individual merits.

Occasionally, requests are made for capital expenditures of substantial size (minor items are covered by a contingency fund) which have not been included in the original budget. These are handled through what we call "emergency proposals" which must contain complete justification for the expenditure and be approved by the management committee.

As in the case of the operating budget, the capital expenditure budget has also been put on a two-year basis with the second year in less detail than the first. Here again, we want to look further ahead to see the trend of capital requirements. We also prepare a five-year forecast from time to time.

The inclusion of an item in the budget does not mean that the expenditure can be made forthwith. Every request for a major expenditure is again considered at the time the actual expenditure is contemplated to ascertain whether it is still justified in the light of current conditions. For this purpose, we use an asset order which contains the budget reference and an explanation of the project together with the economic support for the expenditure. All proposals in excess of $2,500 must be approved by the management committee.

So much for capital expenditures . . . now let us get into the operating reports and controls.

OPERATING CONTROLS

We have separated our reports and controls into three major headings:

1. *Accounting Reports* are the vital statistics of our business, the basic records which must be kept on a continuing basis in order

   (a) to comply with government and provincial regulations, particularly regarding taxes,

   (b) to provide our stockholders with accurate and periodic reports of our earnings and the general status of our business,

   (c) to provide all levels of management with the basic facts needed to administer the company.

2. *Special Reports* are based on accounting data, but are prepared at irregular intervals on a variety of different topics as they are needed. In general, they deal with the causes and remedies of particular business problems.

3. *Control Reports* are made up of certain carefully-selected series of accounting, financial and operating data. Their purpose is to provide management with a continuing systematic review of trends and current developments in each major segment of the business, and to call attention to short- or long-run conditions that warrant further study and investigation.

CONCLUSION

In closing, let me quote from a recent article in *Harvard Business Review*.

"As the activities of any industrial company increase in size and scope, it usually becomes necessary to decentralize management responsibility and to give an increasing degree of autonomy to each of the various organization units.

"The decentralization of authority and responsibility cannot take place, however, unless adequate provision has been made for the periodic preparation and review of the operating plans of the various organizational units and unless control reports have been developed which will permit the executive management to follow and evaluate the general progress the operating departments are making toward accomplishment of their planned objectives."

In a very real sense, therefore, adequate control reports are one of the prime essentials for expansion, diversification and long-run growth. The better the controls, the greater the degree of decentralization which is possible with safety.

Let me emphasize the fact that control reports, no matter how well conceived and implemented, cannot do the whole job. They will never force the executive into obsolescence!

For further reading

SALES FORECASTS AS A BASIS FOR BUSINESS PLANNING AND BUDGETING, L. E. Wengart, N.A.A. Bulletin, Sept. 1957.

SALES FORECASTING, J. E. Cotter, Advanced Management, Sept. 1959.

PRACTICAL TECHNIQUES OF FORECASTING, PLANNING AND CONTROL, AMA Manufacturing Series #216.

TRANSLATING THE BUSINESS FORECAST INTO A COMPANY PROGRAM—A CASE HISTORY, D. R. Gilmaster, Cost and Management, Jan. 1959.

TOPICAL comments

LOOKING AHEAD

The labor market will be swelled by about 100,000 teenage job-seekers per year for the next ten years, quite a load for the economy to digest.

- This contrasts with a yearly average of 5,111 potential job-seekers reaching the 15-19 age group over the last two decades.
- Universities and governments have been spending money to offset this change at the university level but very little provision seems to have been made for the 93% who don't go to college.
- The result may well be a high level of unemployment which cannot be alleviated by ordinary measures. This unskilled and low-spending group is no satisfactory replacement for the experienced older worker or the skilled immigrant, nor does it bring a compensating impetus to the consumer market.
- Suggestions for the solution of this problem include comprehensive adult training programs at the federal level and action by the National Employment Service to retain and replace older workers with obsolete skills but, notwithstanding, the problem remains acute. (*Fin. Post, Mar. 12/60*)

Helicopters may soon be a familiar sight at the local gas station. Almost ready for the market is a one-man helicopter manufactured by an American firm. The machine uses regular car gasoline and may be serviced by an auto mechanic. Cost will be about $7,000 though a do-it-yourself kit for the mechanically inclined may sell for around $2,000. (*Can. Bus., Mar./60*)

Advertising volume will more than double in Canada in the next ten years, advertising executives predict. (*Fin. Post, Feb. 27/60*)

A $15 million electronics boom is expected to be sparked within the next five years by the licensing of eight "second" channel TV stations. Though the boom will be comparatively short-lived, predictions are that it will exceed the previous sales spurt of the early '50's. (*Fin. Post, Mar. 12/60*)

ON THE PERSONAL SIDE

The tardy office worker is seldom penalized, a recent 25-company survey shows. The number of latecomers in these companies varied from 3 to 33% of total employees, but no company reported taking punitive action for habitual offenders despite warnings and discharge cited as penalty. (*Ind. Relations News*)

Sufferers from coronary disease may look for X-ray treatment to replace present surgical method. U.S. research suggests X-ray treatment may stimulate blood, and also eliminates stress of surgery. (*Fin. Post, Feb. 27/60*)

Another strong hope for the treatment of coronary disease, pioneered by the University of Saskatchewan and now gaining world-wide medical recognition, is the use of nicotinic acid (commercial name: niacin) to prevent hardening of the arteries. The drug normalizes the level of blood cholesterol, the chief suspected cause of hardening of the arteries, and has achieved amazing results in experimental research. A breakthrough here would be a major triumph against heart disease which

- Kills 60,000 Canadians annually
- Is responsible for a work-loss of more than 50,000 man years annually in Canada
- Is the most common cause of physical disability, leading accidents, rheumatism and arthritis, deafness and blindness in that order. (*Sat. Night, Mar. 19/60*)

If you are really serious about that peaceful vacation, pick any time but the last two weeks of July and the first two in August. A recent CMA study shows that of the 63% of firms shutting down for vacations, 94% do so within this peak period, contributing to congested highways and jammed vacation spots during this favorite holiday time. (*Industry, Mar./60*)

OF GENERAL INTEREST

Labor income rose nearly 8% in 1959. Total wages and salaries of paid workers reached an estimated $17,717,000,000 as compared to $16,434,000,000 in 1958. All regions shared in the increase. (*DBS, Mar. 4/60*)

New pre-dried paint has been developed that makes brushes unnecessary. The paint comes in self-adhesive sheets sandwiched between two layers of paper, which are removed consecutively as the paint is applied. The new method is hailed as a boon to the graphic arts and useful for decals, signs and advertising promotion. (*ASAE Journal, Jan./60*)

Railroads are now insuring against strikes. Daily indemnities paid to a struck company cover costs and obligations up to a 365-day maximum. Premium is less than $1,000 per year but if there's a strike, non-struck companies are charged an additional premium to cover the cost.

A new traffic signal is under serious consideration as having distinct possibilities in aiding motorists, rather than adding to the confusion of the variety of traffic signs and signals that the motorist is asked to decipher.

This new device is very simple; it would mean adding an extra light on each side of existing signals. These signals would be some color such as purple, and their purpose would be to indicate to the motorist before he reaches an intersection if a turn in either direction is possible at that time.

This would eliminate the present use of signs forbidding turns at certain hours and the need for a motorist to search for the "no turn" signs at intersections, and then associate it with the hour, whether A.M. or P.M.

The system has been recommended by the Toronto Traffic Board and is being examined by other cities. It has also aroused interest in the U.S.

Books in Review . . .

POLICY FORMULATION AND ADMINISTRATION, Third Edition
By George Albert Smith, Jr. and C. Roland Christensen, Richard D. Irwin, Inc., Homewood, Illinois, xxvii 835 pp. $7.50.

Reviewed by C. G. Edge, R.I.A.

The third edition of this casebook of top-management problems in business is a "must" for those groups using the case study method in developing a perspective of the total viewpoint of business.

Some cases in the previous edition have been omitted and others added and, as a result, there are now 33 cases covering the period 1936 to 1958 illustrating the various stages of the economic cycle. The cases cover periods of severe depression, recovery, conversion to war, conversion to peace, conversion to defense mobilization and recession; they are drawn from 30 different industries and give an idea of the diversity of business problems, while illustrating the underlying similarity of the tasks facing the administrator.

An excellent introduction summarizes the type of the problems of top management and the way these are resolved, the objective in studying the cases, and the nature of the case study method.

The coverage of the cases is illustrated by the way they have been grouped under six headings:

I. The Top Management Viewpoint.
II. Sizing up Situations, Formulating Policies and Planning Programs of Action.
III. Organizing Administrative Personnel and Putting Plans into Action.
IV. Control.
V. Day-to-Day Administrative Problems.
VI. Follow-up and Re-Appraisal.

The objective in studying these business policy cases is to develop insight, intellectual power, self-judgment, a sense of leadership responsibility and self-confidence.

Professors Smith and Christensen point out that the information given in the cases provides facts and opinions, but not an evaluation of them; that the cases do not state problems or suggest solutions. Discussion of the cases is intended to engender "ways of thinking", "ways of feeling" and "ways of doing."

In these days of specializations, a book which fosters the solution of business problems from the viewpoint of the company, as a whole, is a welcome medium for broadening a person's outlook.

WAGE DETERMINATION—An Analysis of Wage Criteria
By Jules Backman, D. Van Nostrand Company (Canada) Limited, Toronto, 316 pp. $7.25.

Reviewed by R. R. Lisson

Jules Backman, an outstanding adviser on American labor problems, carefully scrutinizes six wage criteria in his analysis of the factors which play large roles in modern collective bargaining.

The six criteria are wage comparisons, cost of living, budgets, productivity, ability to pay, and economic environment. Backman's treatment of them in this volume should be required reading for all those dealing directly with labor problems, or even those desiring to understand the complex problems of remuneration in the context of a national economy.

The author explains the economic foundations upon which industry and labor stand while fencing for the advantage in collective bargaining.

The vast amount of authoritative data made available in the analysis, answers many questions revolving around the motivation, and the reasoning behind labor negotiations. It is our opinion the negotiators of either side would be much more astute in settling a contract, and certainly much more able to diagnose and cope with the opposition's tactics, after having read and understood Mr. Backman's book.

If there is any single aspect of the book which might be criticized, it is, ironically, the author's thoroughness. The flow of ideas to the reader is sometimes obstructed by mazes of detailed statistics. This might have been overcome had the author chosen to make use of a complete statistical index to which one might refer for substantiation of points made in the text.

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A DISTRIBUTION COST SYSTEM*

By Gordon W. Riehl,
Monteith, Monteith, Riehl & Co.,
Chartered Accountants,
Oshawa, Ontario.

In this thesis, the author outlines a simple distribution cost system for the food industry that provides effective control over goods at a minimum of cost. The system gives adequate information on the costs of selling and delivery in plenty of time to assist management with current operating decisions and measures quickly the efficiency of branches, salesmen, routes and vehicles.

DISTRIBUTION costing presents a greater problem to the cost accountant than production costing does. Distribution costs are more numerous, varied and flexible. They are more difficult to standardize and to relate to unit of product. Since distribution costs take place over a wide area, they are more difficult to measure than those of production. No timekeepers and inspectors are at hand when a salesman calls on a customer. Every salesman's call does not produce an order.

Indirect costs have always been a problem in production; in distribution, they represent the majority of costs. Distribution costs may be classified as follows:

1. Direct selling
2. Advertising and promotional
3. Transportation
4. Warehousing and handling
5. Credit and collection
6. Financial
7. General distribution expense, (research, share of administrative expenses, etc.).

In practice, it is not usual for a business to analyze all of these classifications. Usually each classification demands a different method of handling, and many of them may not be a significant part of the total costs. Therefore, the more important elements are usually analyzed.

This thesis discusses the treatment of direct selling and transportation costs. While the enterprise discussed is in the food distribution industry, the problems could apply to manufacturing concerns with similar distribution operations.

The accounting system presented is required by the nature of the business operations to provide the following:

1. Control of the goods
2. Adequate cost information at a minimum price.

The amount which can be expended on cost analysis is limited by the following factors:

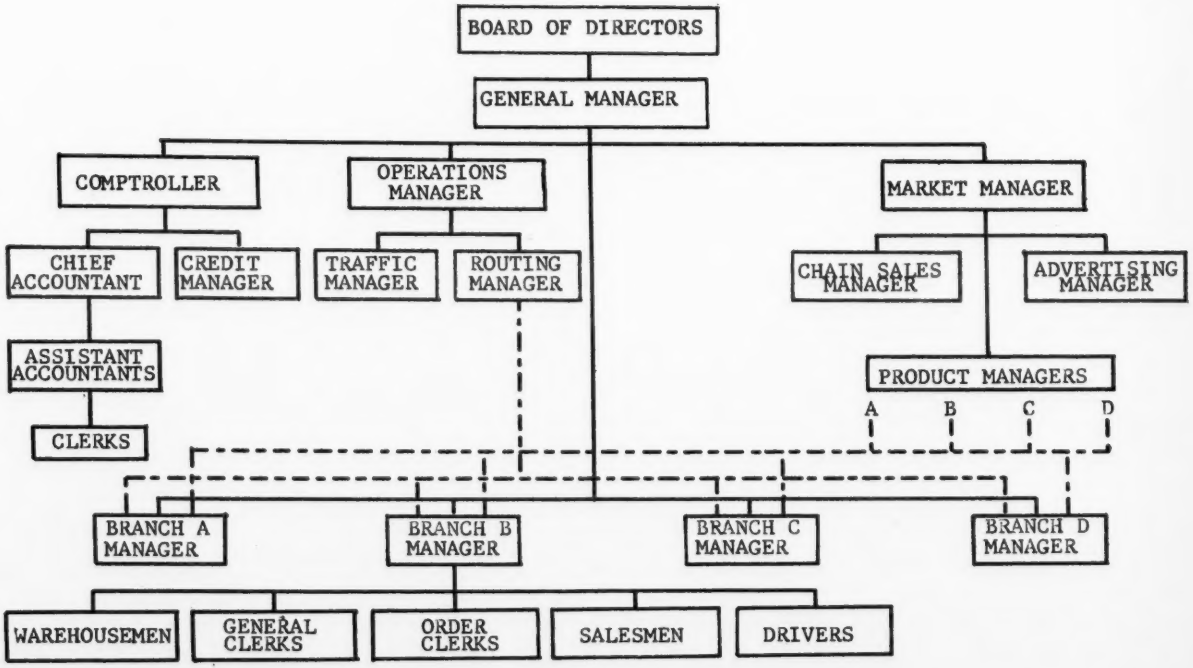
1. The business operates on a very close margin
2. A diversity of low-priced products is sold in small quantities to a great number of customers.

*Condensation of a thesis submitted for R.I.A. qualification.

Winner of the Ontario Society's Gold Medal for high standing in the 1957 Advanced Cost Accounting examination, Mr. Riehl received his R.I.A. last year. He is a partner in the firm of Monteith, Monteith, Riehl & Co., a Chartered Accountant, and a Licensed Trustee in Bankruptcy. Born and educated in Stratford, Ontario, Mr. Riehl received his C.A. in 1948 and that year became a partner in the firm. The following year he established the firm's Oshawa office which he now manages. Mr. Riehl is a member of the Oshawa Chapter of N.O.M.A. and of several other business and service groups in Oshawa.

ORGANIZATION CHART

EXHIBIT 1



In other words, there are a great number of transactions but not sufficient profit to allow for an elaborate cost system. However, a method is required to determine the profits contributed by product groups, customers, routes or areas, as decisions based on these facts may make the difference between profit or loss. The procedures outlined represent an actual system designed by the writer but modified to apply to a mythical less-specialized business. It contains two main features:

1. A method of inventory control with branch warehouses where perpetual inventories are too expensive to maintain.
2. An analysis of distribution costs.

While the thesis applies to a small business, it may be adapted to a larger operation.

COMPANY ORGANIZATION

The business is organized on a branch warehouse system (Exhibit 1). The company is managed by a board of directors. The immediate management of the business is carried out by the general manager to whom the branch managers are directly responsible. The head office organization breaks itself into three parts headed by the market manager, the operations manager and the comptroller.

HEAD OFFICE INVENTORY

A central warehouse is maintained at head office for supplying the branches. A portion of this warehouse is used as a local distribution centre or branch warehouse and is treated as such for accounting purposes. A perpetual inventory is maintained for the central warehouse but not for the branches. This is practical because the movements in and out of the central warehouse are in substantially larger quantities than those of the branch warehouses. Therefore, the cost of recording is less per unit of sales. Since there is nothing unusual about the maintenance of these perpetual inventory records, there will be no time spent on this part of the system.

Because of the volume of turnover and the cost of warehouse space, it is necessary to keep inventories at a minimum without interfering with the distribution of goods. The system must ensure that supplies do not run below a minimum amount and this amount is stated on the inventory card. The minimum figures must be changed from time to time as the consumer demand changes. There are two other factors that may influence the minimum balance of inventories carried. The savings of buying in larger quantities where a favorable discount may be obtained often exceed the costs of carrying a large inventory. Buying at times of market surpluses can also result in substantial savings. The procedure for taking inventory is the same as in the branch warehouses and will be referred to later.

BRANCH INVENTORY

The branch warehouse is charged for goods at retail price and must account for the goods received in either sales or stock on hand valued at retail. This system must allow for certain factors such as spoilage of goods, changes in retail price and usually an allowance for shortages.

The journal entries at head office are as follows:

Dr. Branch A inventory	$10,000.00	
Cr. Head office inventory		$8,200.00
Branch A inventory reserve		1,800.00

to record goods shipped to Branch A at retail price.

When goods are charged to the branch inventory, the difference between cost and retail price is credited to branch inventory reserve which represents the gross profit. While the inventory is still unsold, it represents a reserve, i.e. reducing branch inventory from selling to cost price. However, as the goods are sold, the balance becomes the gross profit.

While the products themselves bear different mark-ups, experience has shown that the gross profit ratio can be closely estimated. Therefore, each week, the inventory reserve is decreased by the estimated gross profit based on a percentage of the weekly sales.

The inventory charged to the branch at retail must also be reduced to reflect sales. The following journal entry illustrates the accounting treatment:

Dr. Cost of goods sold	$5,500.00	
Inventory reserve	1,500.00	
Cr. Branch A inventory		$7,000.00

Branch A will now be responsible for the balance of inventory at retail value.

An actual physical inventory is taken every four weeks and the inventory reserve adjusted to cost of goods sold, so that the reserve reduces the branch inventory to actual cost. Where changes in retail prices are effected or certain goods become unsaleable, similar adjustments must be made.

It should be noted that changes in retail price affect the valuation of the inventory at retail prices, whereas spoilages represent an actual loss and therefore are charged directly to the cost of goods sold. Hence, it may be seen that a weekly gross profit picture is quickly obtained, although it is necessary to use an estimated figure. Experience has shown that this estimate can be accurate. Details for these entries are supplied by Exhibit 4, The Analysis of Branch Trading.

GROSS PROFIT ANALYSIS

Every four-week accounting period, a definite inventory is taken at retail and adjusted to cost. The recording by product group of the branch shipments, adjustments and inventory makes it possible to divide sales in the same manner. Thus sales do not have to be analyzed and a great deal of clerical work is eliminated.

EXHIBIT 2

ANALYSIS OF TRADING BY PRODUCT GROUPS

	Product Group			
	X	*Y*	*Z*	*Total*
Opening inventory at retail	$10,000	$15,000	$16,000	$ 41,000
Shipments	40,000	27,000	26,000	93,000
Adjusted prices of inventory	1,000	−1,500	2,000	1,500
Total to account for	51,000	40,500	44,000	135,500
Less closing inventory retail	12,000	16,000	14,000	42,000
Sales for period	39,000	24,500	30,000	93,500

Likewise a gross profit by product group can be obtained by determining cost of goods sold as follows:

Opening inventory at cost	$ 8,000	$11,000	$14,000	$ 33,000
Shipments at cost	32,000	21,000	22,000	75,000
Spoilage	200	150	300	650
	40,200	32,150	36,300	108,650
Less closing inventory at cost	9,500	12,000	12,000	33,500
Cost of goods sold	$30,700	$20,150	$24,300	$ 75,150

The foregoing is obtained from an analysis of the general ledger accounts which show total only and not product groupings. A weekly gross profit statement is drawn up using total sales only, whereas the monthly statement shows product groups.

PROFIT AND LOSS BY PRODUCTS

The gross profit for a particular product may be obtained by following the above process. By allocating distribution costs, the contribution of a product to the company's profits may be determined. Some products do not produce the desired profit margin. This may be offset in part by volume, or the product may be one that cannot be eliminated from the line of products offered for sale because of customer demand. For example, a frozen food wholesaler, in order to sell his other products, would have to handle frozen orange juice even though he could not obtain a profitable price. However, he would probably not try to sell less popular lines that were not yielding a reasonable profit. This is mentioned to emphasize that figures alone cannot determine management decisions.

FLUCTUATING SELLING PRICES

The described method of inventory control is impractical when selling prices fluctuate frequently. When this situation applies to some of the products, a partial solution would be to place these in a separate product group. It will be necessary to account separately for sales in addition to branch shipments and inventory so that an accurate gross profit for this group can be calculated. Marketing experience makes possible the establishment of a gross profit ratio standard which acts as a means of control for this problem.

BRANCH TRADING REPORT

The Branch Trading Report (Exhibit 3) is the master form and is prepared from information given on other forms (not illustrated), the Branch Order Form, Direct Purchase Advice, Branch Adjustment Voucher, Weekly and Daily Sales and Cash Reports, and Chain Sales Advice.

All figures shown are at retail value. The branch is charged for the goods it receives and credits are made to branch inventory for deliveries to other branches, spoilage, price reductions, discounts allowed and special credits. After allowing credits for retail and chain sales, the inventory is reduced to the theoretical balance that should be on hand. This balance is checked when a physical inventory is taken at the end of every fourth week and any differences are provided for in the head office records.

EXHIBIT 3

BRANCH TRADING REPORT

Branch A For the Week of 2/1

Debits				
Opening Inventory				$18,000.00
Transfers from—				
Head Office			$12,800.00	
Branch B		$ 65.00		
C		180.00		
D			245.00	
Direct Purchases				
Cost	$230.00	Selling	300.00	13,345.00
Special Debits				200.00
A Sub-total				31,545.00
Credits				
Transfers to				
Head Office			200.00	
Branch B				
C		81.80		
D		100.00	181.80	
Special Credits				
Spoilage			65.00	
Prices			120.00	
B Discounts Allowed			60.00	626.80
C Difference (A-B)				30,918.20
Sales—Retail			6,882.55	
D Chain (as per Head Offce Advice)			4,000.00	10,882.55
E Difference (C-D)				20,035.65
Inventory at Retail (as per sheets)				20,000.00
Difference—short or over				$ 35.65

The entries on Exhibit 3 are listed here and show the source of the information.

Debits

Opening Inventory	—Closing inventory previous period
Transfer of goods	—Order Forms
Direct Purchases	—Purchase Reports
Special Debits	—Adjustment Vouchers

Credits

Transfers to other Branches	—Order Form
Special Credits	—Adjustment Vouchers
Spoilage	—Adjustment Vouchers
Discounts Allowed	—Branch Trading Report
Sales—Retail	—Branch Trading Report
—Chain	—Branch Trading Report
Closing Inventory	—Balancing figure or actual inventory every fourth week.

This form is prepared in triplicate weekly by each branch. One copy is retained by the branch manager so that he will be aware of the amount for which he is charged, and the other two copies are forwarded to head office where the accounting is completed and the Analysis of Branch Trading (Exhibit 4) is prepared.

ANALYSIS OF BRANCH TRADING

The Analysis of Branch Trading is a recapitulation of the Branch Trading Report (Exhibit 3), relating the retail price to the cost price, and therefore calculates the gross profit for the period. The cost prices are obtained from—

1. The head office extension at cost of the orders
2. The direct purchase advice
3. The estimate of the inventory at cost or the actual inventory at cost every fourth week.

Adjustments do not affect the cost price but rather the gross profit, e.g. changes in retail price, spoilage, discounts, etc. The form is arranged so that the final figures represent sales, cost of sales and gross profit, as shown here:

EXHIBIT 4

ANALYSIS OF BRANCH TRADING

Branch A — For the Week of 2/1

		Gross Profit	Price	
			Cost	Sales
	Debits			
	Opening Inventory	$ 4,200.00	$13,800.00	$18,000.00
	Transfers—Head Office	3,000.00	9,800.00	12,800.00
	—Branch	61.00	184.00	245.00
	Direct Purchases	70.00	230.00	300.00
	Special Debits	200.00		200.00
A	Total Debits	7,531.00	24,014.00	31,545,00
	Credits			
	Transfers—Head Office	46.00	154.00	200.00
	—Branch	40.00	141.80	181.80
	Special Credits—Spoilage	65.00		65.00
	—Other	120.00		120.00
	Discounts	60.00		60.00
B	Total Credits	331.00	295.80	626.60
C	Difference (A-B)	7,200.00	23,718.20	30,918.20
D	Add Overage: Deduct Shortage	35.65		35.65
E	Sub-total	7,164.35	23,718.20	30,882.55
F	Deduct Closing Inventory	4,800.00	15,200.00	20,000.00
G	Difference (E-F)	2,364.35	8,518.20	$10,882.55
	Proof: Sales per Exhibit 3			$10,882.55
	Reduce to Actual Chain Sales	100.00		100.00
		$ 2,264.35	$ 8,518.20	$10,782.55

Summary

Retail Sales		$ 6,882.55
Chain Sales (Exhibit 3)	$ 4,000.00	
Reduce to Actual	100.00	3,900.00
Total Sales		10,782.55
Less Cost of Sales		8,518.20
Gross Profit		$ 2,264.35

As this information is available weekly and an actual inventory is taken every fourth week, head office is now in a position to prepare several analyses of sales. Branch gross profit is estimated on weekly sales and adjusted to the actual gross profit on a four-week period basis. A reliable gross profit can be estimated from the sales figures according to routes, drivers or salesmen, and distribution costs can be applied on the same basis.

TRADING REPORTS AND ANALYSIS

Since expenses are accounted for weekly to a control account in the general ledger, an immediate income statement may be obtained without waiting until the expenses have been analyzed and distributed from the expense ledger.

The sheets in the cost ledger are so devised that there is a column to show the total of the monthly expenses and a cumulative total as well. The majority of the expenses are posted directly from the accounts payable distribution cards and the payroll analysis. Other expenses are posted weekly. Since most of these can be predetermined, and since they are repeated each week, it is usual to have these journal entries preprinted.

To ensure that all necessary journal entries are made each week, a control record is maintained listing the type of transaction with columns for each week in which the journal entry numbers are recorded.

BRANCH EXPENSES

The cost ledger accounts are arranged to show the expenses by branches in order to coincide with the method of control. Head office costs are not allocated to branches since the branch managers are not responsible for these costs. An exception to this is the financial expenses, and each branch is charged with a rate calculated to reflect the amount of investment in that branch. This is arrived at by taking the average investment in the assets of each branch including buildings, equipment, inventory and receivables, and charging interest rated on this amount, after allowing for charges on certain liabilities which can be directly allocated, such as warehouse mortgage interest or interest on vehicle finance payments. This is considered a necessary allocation since some branches have a heavier investment than others; for example, where warehouses may be rented rather than owned, and therefore create a heavier burden of financial costs.

The accounting system immediately provides the cost of operating each branch and the costs of operating head office. It is possible however, for analysis purposes, to prepare additional information whereby head office costs are allocated to certain of the branch expenses, but this does not form a part of the regular system of accounting.

EXHIBIT 5

STATEMENT OF PROFIT AND LOSS

Branch A _____ For the Second Month

		%
Sales	$50,000.00	100.0
Cost of Sales	38,500.00	77.0
Gross Profit	11,500.00	23.0
Expenses		
Direct Expenses		
Selling		
Salaries and Commissions	1,050.00	
Expenses	350.00	
	1,400.00	2.8
Delivery		
Drivers	2,450.00	
Trucks	1,715.00	
Other	35.00	
	4,200.00	8.4
Total Direct	5,600.00	11.2
Profit before Overhead	5,900.00	11.8
Overhead		
Warehouse		
Cartage	88.00	
Wages	462.00	
Rent		
Utilities	96.00	
Taxes	92.00	
Maintenance	75.00	
Depreciation	292.00	
Other	45.00	
	1,150.00	2.3
Promotion		
Advertising	395.00	
Other	55.00	
	450.00	.9
Administration		
Salaries	840.00	
Office	160.00	
Finance Charge	600.00	
	1,600.00	3.2
Total Overhead	3,200.00	6.4
Profit	$ 2,700.00	5.4

BRANCH PROFIT AND LOSS STATEMENT

Although the expenses are posted weekly to the cost ledger, it is not usual to provide detailed statements of profit and loss each week. A statement of profit and loss is completed more rapidly by using the general ledger expense control figure. Control of the essential costs is obtained on a weekly basis through the preparation of the route operating analysis (Exhibit 13) which can also be prepared more rapidly than a detailed profit and loss as it does not depend on the cost ledger for its information. In a highly competitive distribution industry, providing essential information quickly enough to assist in management decisions can not be stressed too strongly. A matter of a few days delay can render well-prepared material useless.

A monthly (i.e. four weeks) financial statement is prepared for each branch showing the estimated gross profit and the expenses allocated to that branch. These statements are compared with previous months' operations, and while the branch manager is not directly responsible for the gross profit ratio, he is responsible for sales volume and the expense-sales ratios. He is constantly trying to reduce the per cent of total expenses to total sales.

EXHIBIT 6

CONSOLIDATED STATEMENT OF PROFIT AND LOSS

FOR THE SECOND MONTH 1958

Branch	A	B	C	D	Total	%
Sales	$50,000	$60,000	$55,000	$80,000	$245,000	100.0
Cost	38,500	46,260	42,150	61,740	188,650	77.0
Gross	11,500	13,740	12,850	18,260	56,350	23.0
Expenses						
Selling	1,400	1,690	1,580	2,190	6,860	2.8
Delivery	4,200	5,010	4,925	6,445	20,580	8.4
Warehouse	1,150	1,410	1,155	1,920	5,635	2.3
Promotion	450	540	405	810	2,205	.9
Administration	1,600	1,970	1,775	2,495	7,840	3.2
	8,800	10,620	9,840	13,860	43,120	17.6
Net Branch Profit	2,700	3,120	3,010	4,400	13,230	5.4
Head Office Costs					6,000	2.4
Net Profit					$ 7,230	3.0

It is practice in this type of business to relate all costs as a percentage of sales and to use percentages for comparative purposes.

Statements and schedules have shown figures for the accounting period only and cumulative figures have been omitted. This has been done for purposes of simplifying illustrations; in actual practice, cumulative figures would be disclosed as well.

HEAD OFFICE COSTS

On Exhibit 6, the Monthly Consolidated Statement of Profit and Loss, the final cost figure was that of head office costs. Details of this amount are provided on a schedule prepared monthly (or weekly, if required) from the accounts in the cost ledger. The following illustrates the schedule.

EXHIBIT 7

SCHEDULE OF HEAD OFFICE COSTS

FOR THE SECOND MONTH, 1958

Administration:			
Marketing			
Salaries		$2,200.00	
Travelling		300.00	
Advertising		500.00	
Other		100.00	$3,100.00
Distribution			
Salaries		1,100.00	
Travelling		200.00	
Other		100.00	1,400.00
Premises			
Taxes		50.00	
Utilities		50.00	
Heat		75.00	
Maintenance		250.00	
Depreciation		50.00	
Other		25.00	500.00
General Office			
Salaries		2,300.00	
Supplies		150.00	
Telephone, postage		100.00	
Other		100.00	2,650.00
Executive Expense			1,000.00
Professional Fees			300.00
General:			
Unabsorbed Haulage Costs		130.00	
Donations		50.00	
Bad Debt provision		250.00	
Liability insurance		50.00	
Other		25.00	505.00
Total Cost Before Financial Costs			9,455.00
Less Financial			
Discounts Earned	$ 300.00		
Charged to Branches	4,300.00	4,600.00	
Less Expense:			
Bank	300.00		
Lien Notes	400.00		
Bond Interest	400.00		
Other	45.00	1,145.00	3,455.00
Total Head Office Costs			$6,000.00

PROFIT AND LOSS BY PRODUCT GROUPS

Having now determined the percentage of expenses to sales for the four-week

accounting period, the expenses can be related to product groups by applying these percentages. In the industry under review, this basis is equitable since the sizes and values of each product group are comparable. However, in some industries it may not be fair to apply expenses to the product groups on the same ratio as sales. For example, one product group may represent bulkier items which are difficult to handle and require more care, storage and vehicle space, whereas another product group may contain very expensive items which are smaller and easier to handle. There also may be other factors affecting this type of analysis.

While not incorporated in this system, it is suggested that this problem may be overcome by using a weighted sales figure. For example, where a ratio can be determined between product groups by sampling; assuming Product Group A as the base, Product Group B may be found to absorb 50% more of the expenses per sales dollar than Product Group A. Product Group C may absorb 20% less of the expenses per sales dollar of A. These percentages, of 100, 150 and 80 per cent, could then be applied to the total sales of their product group to arrive at a weighted sales figure. Expenses would then be applied on the basis of these weighted figures. The following illustrates the calculations:

EXHIBIT 8

APPLICATION OF COSTS TO PRODUCT GROUPS

Product Group	%	A	B	C	Total
Sales		$39,000.00	$24,500.00	$30,000.00	$93,500.00
Weighted %		100	150	80	
Weighted Sales		39,000.00	36,750.00	24,000.00	99,750.00
Expenses Applied					
Administrative	1.5	585.00	551.25	360.00	1,496.25
Branch					
Warehouse	1.5	585.00	551.25	360.00	1,496.25
Selling	3.0	1,170.00	1,102.50	720.00	2,992.50
Delivery	9.0	3,510.00	3,307.50	2,160.00	8,977.50
Administration	1.2	468.00	441.00	288.00	1,197.00
		6,318.00	5,953.50	3,888.00	16,159.50
Gross Profit		8,500.00	4,500.00	6,000.00	19,000.00
Profit		$2,182.00	*($1,453.50)*	$2,112.00	$ 2,840.50

The expense percentages are determined by applying total costs to the total weighted sales figure of $99,750.00; the percentages are then applied to the weighted sales figure for each product group. Similar analyses can be carried out for individual products when required.

ANALYSIS OF BRANCH COSTS

Branch expenses fall into four main categories, selling, warehouse, delivery and administrative. Some of these expenses are further allocated to show the costs per route, but this does not form a part of the formal accounting system. It is usual to allocate delivery expenses and a part of selling expenses, but not other expenses such as administrative and warehousing.

DELIVERY EXPENSES

Delivery expenses are applied on the basis of the use made of vehicles and drivers. Only those sales expenses which can be directly attributed to route costs such as salesmen's wages, commissions and expenses are allocated.

Since all costs are paid by head office, most of the analysis for this purpose can be done at that level. However, certain information is needed by head office for the analysis of delivery expense and certain sales analyses.

BRANCH VEHICLE REPORT

This form (Exhibit 9) is prepared in duplicate by each driver, approved by the branch manager, and a copy forwarded to head office. It sets out the number of the truck, the driver, route covered, number of calls and the number of miles travelled. This gives some control of vehicle maintenance, a notation being made of the condition of the vehicle, and repairs made or required. It also provides statistical information from which further analysis can be made.

Each driver makes out a report for each vehicle he operates, although usually a driver is responsible for only one vehicle. The analysis of vehicle costs does not form a part of the accounting system.

EXHIBIT 9

VEHICLE REPORT

Branch A — For the Week of Feb. 8

Truck No. 17 — Driver John Doe

Mileage—Beginning of Week	46,235
End of Week	46,735
Total Miles Covered	500

Date	Route	No. of Calls	Mileage Out	Mileage In	Miles Travelled
Monday	1	40	46,235	46,355	120
Tuesday	2	25	46,355	46,415	60
Wednesday	3	30	46,415	46,515	100
Thursday	1	45	46,515	46,665	150
Friday	2	30	46,665	46,735	70
Saturday					
Total		170			500

Repairs:

Is your vehicle in good working order?

If not, give details.

VEHICLE OPERATING COSTS

The vehicle operating costs, that is the cost of gas, oil, repairs and replacements, are allocated to an expense form for each vehicle as set out in Exhibit 10.

A standard cost is applied to route costs so that the efficiency of each vehicle is measured against a standard cost and the standard cost is used to gauge the efficiency of the routes. In this way route costs are not distorted by variations in vehicle efficiency. The standard cost is determined from the standard rate multiplied by the

EXHIBIT 10

VEHICLE COST SHEET

No. 17

TYPE 1957 G.M.C. 2T BRANCH A

Standard Operating Rate $ .09

	Operating Expenses					Fixed Expenses							
Date	Gas & Oil	Repairs	Other	Total	Unabsorbed	Deprec.	Ins.	Other	Total	Mileage	Std. Op.	Applied Total	Cost per Mile
Cum. Fwd.					$62.00								
1/1	$ 32.00	$ 6.00	$2.00	$ 40.00	4.00	$ 46.00	$24.00	$10.00	$ 80.00	400	$ 36.00	$116.00	.29
1/2	40.00	1.00	2.00	43.00	(6.50)	46.00	24.00	10.00	80.00	550	49.50	129.50	.24
1/3	41.00	95.00		136.00	86.50	46.00	24.00	10.00	80.00	550	49.50	129.50	.24
1/4	36.00		1.00	37.00	(8.00)	46.00	24.00	10.00	80.00	500	45.00	125.00	.25
Month 1	$149.00	$102.00	$5.00	$256.00	($76.00)	$184.00	$96.00	$40.00	$320.00	2000	$180.00	$500.00	.25
2/1	35.00	10.00	4.00	49.00	4.00	46.00	24.00	10.00	80.00	500	45.00	125.00	.25
etc.													

actual miles travelled (as per Exhibit 9). This rate is estimated at the normal operating cost according to the weight and classification of the vehicle. An ideal standard is avoided. The efficiency of the vehicle can then be rated by comparing its actual operating costs to the standard costs applied.

VEHICLE FIXED COSTS

Fixed vehicle costs include depreciation, insurance, finance charges, licenses, etc. These expenses are applied directly to route costs as a standard cost since they are not controllable by the branch managers, and the efficient use of the vehicles in the distribution system should absorb these costs. Therefore, the applied vehicle expense includes the fixed costs and the standard operating costs. The fixed costs, since they can be predetermined, are usually entered on the vehicle cost sheets in advance so that the labor of posting these accounts weekly is eliminated. Therefore, the applied vehicle costs, consisting of standard operating and fixed costs, can be used for analysis purposes without having to wait for the accounting of actual operating costs. This saving of time makes the information provided more valuable.

ROUTE COSTS

Once the applied operating cost and the fixed cost have been determined, the cost per mile may be calculated. The following illustrates the calculations:

VEHICLE A

Standard Operating Cost—.09c per mile Mileage—500
Fixed Cost—$80.00

Costs Allocated		Per Mile	Total
Operating	500	.09	$ 45.00
Fixed	500	.16	80.00
	500	.25	$125.00

With this information, plus the cost of the driver, costs can be allocated to the routes on a mileage basis.

EXHIBIT 11
ALLOCATION OF VEHICLE COSTS

		Calls	Mileage	Vehicle	Driver	Total	Cost per Call
Mon.	Route 1	40	120	$ 30.00	$18.00	$ 48.00	$1.20
Tues.	2	25	60	15.00	18.00	33.00	1.32
Wed.	3	30	100	25.00	18.00	43.00	1.43
Thurs.	1	45	150	37.50	18.00	55.50	1.23
	(repeat)						
Fri.	2	30	70	17.50	18.00	35.50	1.18
	(repeat)						
		500		$125.00	$90.00	$215.00	

The average cost per call can be determined by dividing the total route costs by the number of calls, e.g., assuming there are forty calls on Route 1, the average cost

would be $1.20. The average cost per call may similarly be calculated on the total calls per driver, branch or for the business as a whole.

The foregoing analysis is prepared weekly and made available to the operations division at head office and the individual branch managers.

By determining the costs per mile of each vehicle, the costs per call, and the costs per route, management is acquainted with the efficiency of each vehicle and the economics of each route. When the operating cost per vehicle mile rises above the standard, it indicates that the vehicle is no longer efficient. Route costs are analyzed to determine whether they produce sufficient profit to look after the other branch expenses and head office overhead and produce a profit for the company. These expenses, however, are usually considered in conjunction with the direct selling expenses.

APPLIED SELLING COSTS

The selling costs which are applied on a route basis are those of the salesmen, and these are treated in a much similar fashion to the vehicle expenses. While the salesmen's expenses are represented by a control account in the general ledger, they are allocated by subsidiary records which do not form a part of the general accounting records. The salesmen prepare a weekly report sheet showing the number of calls each day, and accounting for their expenses on a daily basis. In order to provide reports to management quickly, this information is made available for costing purposes before it is processed in the general accounting system.

EXHIBIT 12

ALLOCATION OF SALESMEN'S COSTS

	Salary	Travel	Other	Total
Thursday	$17.00	$ 6.50	$ 2.00	$ 25.50
Friday	17.00	7.20	1.50	25.70
Monday	17.00	7.10	1.10	25.20
Tuesday	17.00	8.00	2.60	27.60
Wednesday	17.00	6.50	2.00	25.50
	$85.00	$35.30	$ 9.20	$129.50

APPLIED TO ROUTES

	1	1R	2	2R	3	8	11
	$12.90	$12.60					
		8.30	$13.30	$ 4.10			
				10.90	$14.30		
					6.00	$21.60	
							$25.50
Comm.	6.10	5.60	5.70	6.00	5.70	5.40	6.00
	$19.00	$26.50	$19.00	$21.00	$26.00	$27.00	$31.50
No. of Calls	19	25	15	15	20	20	20
Cost per Call	$ 1.00	$ 1.06	$ 1.27	$ 1.40	$ 1.30	$ 1.35	$ 1.57

Since the sales calls precede the delivering of the routes, the salesmen report on a week which coincides with their servicing of the routes; for example, when delivery is reported on a Monday to Friday basis, the salesmen may report on a Thursday to Wednesday basis. With the knowledge of the daily expenses, the salesmen's weekly salary, the number of calls made each day, and the routes covered, it is possible to allocate the salesmen's expenses to each route on the basis of the time spent, and then price each call in the same manner as the vehicle costs.

Commissions are allocated directly to route costs because sales are reported on this basis. Since the salesmen seldom call on all customers on the route, the number of selling calls are usually less than the delivery calls for each route.

Copies of the above report are forwarded to the branch manager and are available to the sales and operations divisions if required. Due to the repetition of sales, the salesmen in most instances act as order takers and therefore their costs per call are comparatively low. The gross profit per call would not warrant a high sales cost and this must be controlled by the branch manager. However, the costs of establishing new customers is more expensive and must be considered when analyzing route costs.

ROUTE PROFIT AND LOSS ANALYSIS

It is now possible, knowing the gross profit percentage of sales, to determine the efficiency of each route. In so doing, it is realized that after applying the drivers' wages and truck expenses as well as the direct selling cost to the gross profit, the balance remaining must produce a certain profit in order to be efficient. The balance of the branch expenses, that is warehousing costs, overhead selling costs and administrative costs tend to be constant and can be estimated fairly accurately. The amounts are not allocated directly to each route as the time consumed in determining these costs and allocating them would delay the reports and decrease their usefulness; therefore budgeted costs are used and applied to the total branch operation.

From the foregoing information, the following report can be prepared:

EXHIBIT 13

WEEKLY ROUTE OPERATING ANALYSIS

Branch A				Costs			
Route	Vehicle	Calls	Sales	Delivery	Sales	%	Total Cost
1	17	40	$ 638.10	$ 48.00	$ 19.00	10.5	$ 67.00
1R	17	45	747.71	55.50	26.50	10.9	82.00
2	17	25	481.48	33.00	19.00	10.8	52.00
2R	17	30	528.04	35.50	21.00	10.7	56.50
3	17	30	650.94	43.00	26.00	10.6	69.00
4	22	42	509.26	36.00	19.00	10.8	55.00
5	22	41	595.45	39.00	26.50	11.0	65.50
5R	22	42	518.35	37.50	19.00	10.9	56.50
6	14	24	345.00	49.00		14.2	49.00
7	14	23	600.00	56.00		9.3	56.00
8	14	22	702.70	51.00	27.00	11.1	78.00

WEEKLY ROUTE OPERATING ANALYSIS—(*Continued*)

Branch A

Route	Vehicle	Calls	Sales	Costs			
				Delivery	Sales	%	Total Cost
8R	14	24	469.03	53.00		11.3	53.00
9	22	31	572.72	35.00	22.00	10.0	57.00
9R	22	34	480.54	36.00	24.00	12.5	60.00
10	14	27	426.09	49.00		11.5	49.00
11	26	24	694.69	47.00	31.50	11.3	78.50
11R	26	20	383.62	44.50		11.6	44.50
12	26	19	377.07	46.00		12.2	46.00
13	26	23	412.28	47.00		11.4	47.00
14	26	24	649.48	42.00	21.00	9.7	63.00
Total.....		590	$10,782.55	$883.00	$301.50	11.0	$1,184.50

	%	Amount
Gross Profit.....	21.0	$2,264.35
Direct Expenses.....	11.0	1,184.50
	10.0	1,079.85
Branch Overhead (budgeted).....	6.4	690.00
	4.6	389.85
Head Office Overhead (budgeted).....	3.1	337.00
Net Profit.....	.5	$ 52.85
Net Profit Required.....	1.5	$ 161.73

As previously emphasized, percentage margins are important criteria in this business and, having determined the branch and head office overhead percentages of sales, the necessary profit margin for each route can be established. For example, in the foregoing Exhibit 13, branch and head office budgeted expenses were 9.5% of sales, while the gross profit was 21% of sales, leaving a margin of 11.5% for applied distribution expenses and profit. Since the desired profit margin was 1.5% of sales, the ideal distribution costs would have been 10% rather than 11% of sales. The fact that a route does not produce the desired margin does not indicate that it should be discontinued unless more profitable territories are available. For example, route 6 in Exhibit 13, while indicating a profit after applied distribution costs of only 6.8%, does contribute that profit to the payment of the overhead expenses. It can be assumed, if this route were discontinued, that the overhead expenses would not decrease significantly and the resulting idle vehicle costs would have to be absorbed by other routes. If, however, another more profitable use could be found for the vehicle, this route would be considered immediately, and it might be found that the dispersal of this route among other routes would increase the profit margin. The problems and varying solutions are almost limitless but it is obvious that Exhibit 13 is the key report in controlling distribution costs in this particular business.

Copies of these reports are made available to branch managers, and to the operation and sales divisions.

BREAK-EVEN ANALYSIS

Break-even analysis will not be dealt with in detail. Most distribution systems, particularly where vehicles are used, have two types of break-even points, short term and long term.

A distribution system employing a fleet of trucks can reduce their fixed costs by reducing the fleet and rearranging the responsibilities of the remaining vehicles. This would not be practical for a manufacturing plant.

Since fixed vehicle costs tend to become variable, the break-even point will be reduced. The same situation may also occur with other distribution costs.

For short term projections, branch variable expenses would be limited to vehicle operating expenses and salesmen's expenses. Branch warehouse and overhead expenses would, for practical purposes, be considered fixed, as would head office expense.

It is apparent that the break-even point is high in this type of operation and a slight reduction of volume can produce operating losses. This, therefore, emphasizes the necessity of timely accounting information.

A break-even chart does not indicate the source of volume variations; for this purpose the weekly route operating analysis (Exhibit 13) provides the required information.

HEAD OFFICE CARTAGE

The operation division of head office operates trucks to deliver supplies to the branches and to transport goods from suppliers. The method of accounting for truck costs is similar to that of the branches, except that a standard cost for both operating and fixed delivery cost is charged to the functions serviced. The use of a standard rate allows the costs of branch deliveries and the cost of purchases to be predetermined. This latter is more convenient for determining unit costs, the cost of sources of supply, as well as the selling prices.

The unapportioned balance of head office cartage is charged as an expense of head office.

CONCLUSION

Delivery and direct selling costs have been emphasized in this system since they are, as in most distribution systems, the major functions. This would certainly not apply to many industries where other functions, such as advertising, warehousing and collection, are more important. However, for the average business concerned with distribution information, it would be sufficient to analyze the other distribution functions periodically.

While the system is somewhat complicated by a branch distribution system, its application to a single distribution centre is obvious. Simple accounting procedures, familiar in other accounting fields, are employed.

The control of goods by the use of a retail price valuation is common to chain stores. It is a practical and economic system but limited to specific areas of application.

Many industries, which find it too costly to classify and analyze sales, may find the solution by classifying purchases and inventories as described in the foregoing thesis.

5

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Editorial Comment . . .

Another Budget

THIS YEAR'S budget speech did not bring any exciting revelations of tax increases or mounting government deficits. The press commentators accepted it rather critically but, as it did not raise any major issues, discussion of the budget disappeared fast from the front pages.

The industrial accountant looks at the budget with two questions in mind: "What does it do to my company?" and "How am I personally affected?"

The first question is easily answered. Corporation taxes are not increased, because last year they were increased retroactively to January 1 of that year.

The Minister announced that a comprehensive study of the problem of designated surplus and corporate re-organizations will be undertaken. This study will not affect the 1960 taxes. The Minister expects expressions of view from all interested persons and organizations. This will be an opportunity for the management accountant to put forward a strong recommendation for simplification of the complicated procedures necessary for companies wishing to make use of the tax-paid undistributed surplus sections of the Act.

The Minister introduced a measure to provide for a new class of profit-sharing plans which will permit tax deferment to the year of actual receipt. This very desirable measure is already carrying a most undesirable restriction. In computing income for the year, an employer may deduct an amount which, when added to his contribution, if any, under a registered pension fund or plan, does not exceed $1,500 per employee. In all cases, therefore, where a company has an approved pension plan, the contribution to the new type of profit-sharing plan will be severely restricted, if not completely ineffective. The restriction appears discriminatory if one takes into account that it is directed particularly against employees who pay a very high rate of income tax on their salaries and, through this restriction, are deprived of the benefits otherwise available to those not burdened with high tax deductions on their income. It is assumed that the new type of profit sharing plan will be existing side-by-side with those established under Section 79 of the Act, whereby tax becomes

payable immediately a profit share is allocated to an employee, regardless of whether it is vested in him or not.

If the accountant serves a company having an interest in another company to an extent of less than 70%, Paragraph 9 of the Budget Resolutions will warn him that the present rule referring the term of association between corporations to ownership of shares, will be replaced by a rule related to control of the operations. "Control" is not defined in the interpretation section of the Act, but one could conclude from Section 28(1(d)) that ownership of more than 50% of the voting shares is required to exercise control. Clarification of this aspect would be most desirable. Commentaries on this announced measure modestly assume that the resolution may reduce the scope of benefit of the lower rate of 21% on the first $25,000 of taxable income.

The effect of the budget on the individual taxpayer is, in general, not very substantial. We will, of course, realize that our tax rate for 1960 will be higher than for 1959 because the increases brought about by last year's budget took effect only in the middle of the year and, therefore, had only half of the total impact. Although the 1960 budget does not increase taxes, personal income tax liabilities for 1960 compared to 1959 will be higher on the same taxable income.

Taxpayers participating in registered pension plans are hardest hit by Paragraph 12 of the Budget Resolutions. This replaced the elective tax rate on withdrawals from pension plans, which previously was the average income tax rate for the three years preceding the year of repayment.

The effect of this change can be seen from three practical cases, picked at random from the file of an existing plan:

	Amount of Repayment	*Tax Calculated Under Previous Rate*		*Tax Payable Under New Rates*	
Case #1	$ 790.	7.8 %	$ 62.	10%	$ 79.
Case #2	$ 3,787.	6.5 %	$ 246.		$ 657.
Case #3	$24,041.	18.63%	$4,303.		$8,016.

This measure is unfair to the employee who, for many years, may have received contributions from the employer, and may have contributed himself to a pension plan. Tax rates in all these years would have been relatively low, even on the highest dollar of his income. If he now terminates, or is terminated, and cannot obtain employment in another enterprise with an approved pension plan, nor decides to transfer the balance in his favor into a registered retirement savings plan, he will have to pay a rate of 40% on any amount which exceeds $10,000 out of his repayment. The affected groups can be expected to object strongly to this unexpected measure which has all the ominous characteristics of retroactive taxation. The measure applies to the year 1960 and, therefore, to all repayments made between January 1, 1960 and the date when the budget proposals are passed by the legislature. It is also retroactive from the viewpoint that employees have paid into pension plans with the understanding that they will be taxed at pre-determined moderate rates if they should withdraw from these plans.

This discussion of some salient points of the budget makes no claim to completeness, but merely tries to prove that even a "dull" between-election budget may have its pitfalls.

THE USE OF DIFFERENTIAL COST ANALYSIS AS A TOOL FOR MANAGERIAL DECISION-MAKING

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In considering production alternatives, management needs more information than that provided by historical costing procedures. Differential cost studies disclose the amount by which an increase or decrease in production is not matched by a proportionate increase or decrease in costs. This article explores the various facets of differential costing and demonstrates their application in a variety of circumstances.

ASIDE from the development of mass production methods, the evolution of "scientific management" is perhaps the most significant factor in industrial development. The concept is based on the idea that the scientific method, the process of investigation, analysis and decision, should be used to resolve the problems of management. If business is viewed in this manner, the organic functions of management—planning, organizing and controlling—become quite clear. The basic problem of management today is to devise ways of effectively accomplishing these three functions. Many methods, techniques and tools have been developed to assist management in this work.[1]

Cost accounting no longer provides merely historical data that are recorded, summarized, and presented as part of the general accounting system. Its task has been expanded to permit the control and possible reduction of costs and to guide management in shaping future policies and operations. The analytical aspects of cost accounting are now utilized to determine break-even points, profit-volume relationships, differential cost studies and replacement cost determinations. It is not only difficult for the cost accountant to define the term "actual cost", it is also difficult to determine its reliability, for actual cost is the result of the assignment of cost factors, many of which are made on a more or less arbitrary basis.

Actual or historical costs are an essential part of any accounting system. Financial accounting, representing as it does a report of current financial conditions and results of over-all operations, must have as its base as accurate a reporting as possible of actual or historical costs. The reliability of standard costs stems from the fact that they have been based on careful studies of material usage requirements, operation methods and time, variability of costs with volume, and the best management of equipment. Furthermore, when the standards have been tested and performance

[1]) Glen A. Welsch, "The Controller's Function in Top-Level Management", *The Journal of Accountancy*, July 1954, p. 66.

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under them has been recorded, there is a good basis for predicting what performance can be expected in the future. Actual costs can never be kept exactly in line with standard costs, and this may require some forecasting of variances for budget purposes. The need and amounts of the anticipated variances will depend upon the level at which the standards have been set.

From the practical point of view the great benefit of a standard cost system and its related reports to management is that it saves management from having to wade through masses of figures to find out what needs attention and action.

It can be seen that most of the functions of management lie in anticipation. Its job is to plan ahead correctly. In anticipating difficulties or planning a course, time and factual information are the essential factors. The only way good judgment can be used in setting up new plants, processes and equipment is to have cost studies made before the money is spent.

RULES FOR REPORTING

There are one or two "don'ts" about report-making which it seems fairly safe to state:

1. There must be willingness to drop the bookkeeping point of view, the debit-credit-balance idea. Don't present reports merely because they tie in with the general books, which you know are inaccurate.

2. Don't make a report which is not accurate or which merely raises a cloud of hasty speculation. If the report has nothing positive to say, don't issue it until enough information has been collected to make it significant.

The following procedure should be followed in making special reports to management:

1. Define the problem completely.
2. Determine what cost will be effected by proposals in question.
3. Estimate the costs and related income as accurately as possible.
4. Compare the costs and related income.

Do not prize yourself on your analytical ability—the ability to separate something into its component parts—unless you acquire the faculty of synthesis, the ability to bring these parts together again. The chief product of your cost report should be a profit made or a loss reduced. If that is not achieved, then there has been a waste.

Exhibit I is a cost report taken from an article by William E. Perry entitled "Case Study of a Standard Cost System" which appeared in the September 1, 1940 issue of *N.A.C.A. Bulletin*. This type of report analyzes the variances between actual and standard costs, explains the reasons for these varianees and establishes the responsibility for their existence.

USE OF DIFFERENTIAL COSTS

Whether or not an actual or standard cost system is in effect, the final figures do not always offer the kind of assistance that management needs to make a decision. Sometimes it is necessary to base the cost figures on assumptions entirely different from those ordinarily used. One such new cost computation involves the calculation of the unit cost of increasing production beyond present levels. "Differential cost analysis contrasts the differential (or marginal, or incremental) cost of the added output with the selling price that might be obtained from the additional product."[2]

[2]) Adolph Matz, *Cost Accounting*. First Edition, Southwestern Publishing Co., Cincinnati, 1952.

EXHIBIT I

ANALYSIS OF MANUFACTURING VARIATIONS

Month.....

COST CENTRE: WARPING — Operation Level 62%

ITEMS OF COST Account	100 % Standard Amt.	%	Actual Cost	Standard Cost	Manuf. Var'ns	Budget Standards	Explanation	VARIATIONS Operation Level	Management	Foreman	Foreman's Budget
LABOR											
Warping			$390	$355	$−35	Use standard on Operation Rate Sheet	10% Wage Increase	$ —	$−35	$ —	$390
Setting Up			82	98	+16	Use standard on Operation Rate Sheet	—	—	—	+16	98
MATERIAL											
Cones and Tubes			35	28	− 7	Use standard on Operation Rate Sheet	—	—	—	− 7	28
Sizing			270	239	−31	Use standard on Operation Rate Sheet	—	—	—	−31	239
BURDEN											
Handling	$100	16	100	64	−36	Allow full amount at all levels	—	−36	—		100
Repairs	40	06	20	24	+ 4	Allow full amount at all levels	—	−16	—	+20	40
Supervision	250	40	250	158	−92	Drop Asst. Foreman below 70%	Asst. Foreman should be dropped at this level	− 2	—	−90	160
Depreciation	150	24	150	96	−54	Allow full amount at all levels	—	−54	—	—	150
Insurance	10	02	10	8	− 2	Allow full amount at all levels	—	− 2	—	—	10
Taxes	20	03	20	12	− 8	Allow full amount at all levels	—	− 8	—	—	20
Boiler & Power	40	06	35	24	−11	Allow actual cost each month	—	−11	—	—	35
Plant & Bldg.	20	03	22	12	−10	Allow actual cost each month	—	−10	—	—	22
	$630	100	(607)	(398)	(209)						
TOTAL			$1,384	$1,118	$−266		—	$−139	$−35	$−92	$1,292

This differential cost consists largely of an increase in the direct operating expenses, but it includes many other elements. Differential costs are often the decisive factor in determining how cheaply the concern can afford to sell additional goods.

The difference between the differential cost and the historical unit cost may be very great, particularly in a business requiring plant facilities and large standby organizations. "Many decisions to curtail operations and lay off workers might be avoided if the differential cost and the differential profit or loss were known, after the effect of discriminatory competitive retaliation and even permanent reduction of prices is taken into consideration."[3]

Differential costs will disclose the amounts by which an increase or a decrease in production is not matched by a proportionate increase or decrease in cost. The amounts represent the recovery by increased production or the failure to recover, due to decreased production, of the fixed costs of the business. These fixed and constant costs represent the cost of standing ready-to-do business, the cost of capital, fixed charges on plant and equipment, and the constant costs of the standby organization. Differential cost studies disclose how much of this cost of unused production capacity is absorbed or left unrecovered by the acceptance or rejection of a given proposition. Actually, the knowledge that it is the margin of sales beyond the break-even point that produces the profit is elementary, but few cost reports clearly reflect this fact or show where the break-even point is under various conditions. Cost reports usually show a cost for a "unit" of a fixed quantity of production. The fixed quantity of production is the number of units over which the allocated and fixed costs are spread. If the exact number of units in the fixed quantity of production is actually produced, the cost of each unit is identical. But if any less is produced, it is obvious that there is "idle capacity" and an unabsorbed amount of allocated and fixed costs remaining to be absorbed. If more is produced, it is clear that all the allocated and fixed costs have been recovered on the fixed quantity of production and the costs of the units above that point are free of these charges.

Differential cost studies cannot be confined to the study of merely adding another unit and computing its cost. They include problems such as the shutdown of the plant, the abandonment of part of plant output or the entire plant, the cost of a side-line or a change-over, and the problem of enlarging plant capacity. Differential costs should not be confused with "direct costing", meaning that only direct materials, direct labor and the direct variable overhead are considered for costing and inventory pricing. This paper deals with differential cost as a tool for cost analysis and not for costing purposes.

THE ROLE OF VARIABLE COSTS

The variable costs are all important in differential cost studies. An increase in the rate of production, maintenance of the present level of production, or a reduction of production, all require constant and detailed attention to the variable costs.

A variable expenditure, either an expense or a direct cost, is one that varies directly with the activity causing it.

However, the term differential cost is not to be construed as the equivalent of variable costs. In shifting from one level of output to another, management may need to

3) Harry E. Howell, "Postwar Pricing and Cost Accounting", *N.A.C.A. Bulletin*, Vol. XXVII, No. 6, p. 227.

take into consideration a possible change in costs which are relatively fixed.[4] However, the budgets also clearly indicate that when activity is doubled, expenses do not necessarily double too.

The field of operating profit lies in the expense differential for varying volumes above the break-even point. That is why expense control plays a vital part in business. It profits business but little to figure gross margins and potential volume unless there is a realistic knowledge of where the break-even point lies. A change in fixed expense materially alters the break-even point if the variable expenses remain constant. The break-even point should not be too close to normal operating capacities because of the small profit attainable. Likewise, this situation would give management a constant marketing headache in its struggle to maintain the essential volume. The safe proportion is between 50 and 60% of normal sales or production volume.

The variable costs in a healthy business will range between 70 and 80% of the sales dollar, regardless of size. The fixed expenses are related both to size and character of a business and are particularly affected by the amount of hand versus mechanized manufacture used in processing.[5] Where many variables, such as volume, type of product, profit, etc., enter into the over-all budget, determination of the break-even point becomes more complex.[6]

BUDGET AS A TOOL FOR DIFFERENTIAL COST ANALYSIS

The period of budgeting depends on individual circumstances. In a relatively stable industry, annual budgets are usual. In a volatile industry, a desirable period is four quarters forward on a progressive basis and, where the cash situation is tight, the operating budget should be augmented by a monthly budget on a progressive basis.[7]

Exhibit II shows the expected cost of various expense items at varying volumes of production. The exhibit is taken from the previously mentioned article entitled "Case Study of a Standard Cost System" by William E. Perry.

In the flexible budget, the cost accountant possesses a tool which is invaluable for the preparation of differential cost analyses. With the comparisons of the various fixed and variable expenses at different levels of production, the revised costs for each level may be linked with the differential that must be computed. To compute the total differential cost, the total cost of one level of production is subtracted from the total cost of the previous level, and this difference is divided by the increase or decrease in the number of units to be produced. Thus not only the total additional cost is available, but also the avoidable cash output per unit can be computed to match against present selling prices in the competitive market. It is this type of information which is essential for the solving of managerial problems involving the choice between alternate production levels.

4) Lawrence J. Benninger, "Cost and Value Concepts", *Handbook of Modern Accounting Theory*, Prentice-Hall, Inc., New York 1955. p. 292.

5) S. A. Peck, "Expense Control at Varying Volumes of Sales and Production", *N.A.C.A. Bulletin*, Vol. XXII, No. 13, pp. 711-712.

6) Malcolm L. Pye, "How to Determine Break-Even Points with Simple Algebraic Formulas", *The Journal of Accountancy*, August 1948, p. 133.

7) John D. Grayson, "The Controller's Function in Predetermining Profit Through Forecasting", *The Journal of Accountancy*, Sept. 1950, p. 217.

EXHIBIT II

STANDARD COST OF OPERATION AND BUDGET STANDARDS

COST CENTRE: WARPING

Acct. No.	Item of Cost Name	Standard Cost @ 100% Capacity Oper'n No.	Prod'n	Stand. Rate	Total Cost	Budget Standards	Expected Cost at Various Levels of Operation 90%	80%	70%	60%	50%	40%	30%	20%
172	Warping—Piece Work	01	74	$1.90	$	Use standard set on Operation Rate Sheet								
		02	21	2.00	—									
		03	46	2.10	—									
		04	18	3.00	—									
		05	10	3.50	—									
		06	25	4.00	468		421	374	328	280	234	187	140	94
210	Cones and Tubes	01	74	.12	—	Use standard set on Operation Rate Sheet								
		02	21	.10	—									
		03	46	.12	—									
		04	18	.08	—									
		05	10	.20	—									
		06	25	.24	26		23	21	18	16	13	10	8	5
241	Sizing	01	74	2.00	—	Use standard set on Operation Rate Sheet								
		02	21	1.90	—									
		03	26	2.50	303		273	242	212	182	151	121	91	61
320	Handling	—	—	—	100	Allow full amount at all levels	100	100	100	100	100	100	100	100
365	Repairs	—	—	—	40	Allow full amount at all levels	40	40	40	40	40	40	40	40
375	Supervision	—	—	—	250	Drop Asst. Foreman below 70%	250	250	250	160	160	160	160	160
301	Depreciation	—	—	—	150	Allow full amount at all levels	150	150	150	150	150	150	150	150
302	Insurance	—	—	—	10	Allow full amount at all levels	10	10	10	10	10	10	10	10
303	Taxes	—	—	—	20	Allow full amount at all levels	20	20	20	20	20	20	20	20
304	Boiler and Power	—	—	—	40	Allow actual cost each month	40	40	40	35	35	35	30	30
305	Plant and Bldg.	—	—	—	20	Allow actual cost each month	20	20	20	20	20	20	20	20
	TOTAL COST OF OPERATION				$1427		1347	1267	1188	1013	933	853	769	690

EXPECTED VARIATION AT VARIOUS LEVELS

AMOUNT COVERED BY STANDARD COSTS AT VARIOUS LEVELS	1284	1142	999	856	714	571	428	285
EXPECTED VARIANCE (Loss)	−63	−125	−189	−157	−219	−282	−341	−405

The following is an example of an exhibit which might be prepared in such a situation:

SCHEDULE OF PROJECTED ACTION

Differential income	$4,000.00	
Less: Cost of additional product	3,000.00	
Margin to be applied against differential costs		$ 1,000.00
Differential costs		2,000.00
Potential loss from differential production		$(1,000.00)

BREAK-EVEN STATEMENT PROVIDES USEFUL INFORMATION

Another type of exhibit which would supply management with meaningful information is the break-even income statement. The break-even statement is a recasting of the same information used in making a conventional income statement into a form which permits an analysis of volume-cost-profit relationships. Of particular concern in the conventional statement is the fact that the profit and loss percentages have been particularly misleading, hence decisions made on the basis of the pattern of thinking represented by the conventional statement have sometimes led to serious blunders.[8]

The following are examples of both the conventional and break-even profit and loss statements. These were taken from an article appearing in the January 1951 issue of *The Journal of Accountancy* entitled "Advantages of Break-Even Income Statement Compared with Conventional Statement", which was written by Mr. Alexander Bac.

Figure I

CONVENTIONAL PROFIT AND LOSS STATEMENT

Sales	$200,000	100.0%
Cost of Sales		
Beginning Inventory	40,000	
Cost of Production	180,000	
Total	220,000	
End Inventory	68,000	
Cost of Sales	152,000	76.0%
Gross Profit	48,000	24.0%
Commercial Expenses		
Selling Expenses	20,000	10.0%
Administrative Expense	10,000	5.0%
Total Commercial Expenses	30,000	15.0%
Operating Profit	18,000	9.0%
Non-operating Deduction	1,000	0.5%
Non-operating Income	3,000	1.5%
Net Income	20,000	10.0%

8) Alexander Bac, "Advantages of Break-Even Income Statement Compared with Conventional Statement", *The Journal of Accountancy*, January, 1951, pp. 106-107.

Figure II

BREAK-EVEN PROFIT AND LOSS STATEMENT

Item	Total Amount	Fixed Amount	Variable Amount	Variable Per cent
Sales	$200,000		$200,000	100.0%
Beginning Inventory	40,000			
Cost of Production	180,000			
Total	220,000			
End Inventory	68,000			
Cost of Sales	152,000	18,000	134,000	67.0%
Selling Expenses	20,000	8,000	12,000	6.0%
Administrative Expenses	10,000	8,000	2,000	1.0%
Non-operating Deduction	1,000	—	1,000	.5%
Subtotal	183,000	34,000	149,000	74.5%
Non-operating Income	3,000	—	3,000	1.5%
Total Cost and Expenses	180,000	34,000	146,000	73.0%
Marginal Income			54,000	27.0%
Less Fixed Expenses			34,000	
Net Income			20,000	

Break-Even Volume $34,000 ÷ .27 = $125,930

A plant with a maximum capacity of 100% cannot hope to attain this capacity under normal conditions, so a normal capacity of less than 100% is used as the fixed quantity of production. At this normal level all fixed expenses are completely absorbed. If less production is attained, then underabsorbed overhead remains; if more than the normal units are produced, overabsorbed overhead comes into existence.

HISTORICAL COST STATEMENT

A plant with a normal capacity of 90,000 units, which represents 90% capacity utilization, has fixed expenses of $50,000 or a unit cost of $.50 at 100% capacity. The variable overhead per unit is also $.50 while materials cost $1.00 per unit and labor cost is $1.00. The product sells for $4.00 per unit. On the basis of these data, the following information would be presented on the historical cost basis:

Sales (100,000 units)		$400,000
Cost of Sales:		
Materials	$100,000	
Labor	100,000	
Variable expenses	50,000	
Fixed expenses (at 90% capacity)	45,000	295,000
Operating Profit		105,000
Underabsorbed fixed expense (50,000 less 45,000)		5,000
Profit		$100,000

If the sales department now discovers that it can sell an additional 20,000 units at $3.00, the following presentation would be given on the historical basis to reflect the increase in operations:

Sales (20,000 units at $3.00)		$60,000
Cost of Sales:		
Materials	$20,000	
Labor	20,000	
Variable expenses	10,000	
Fixed expenses	10,000	60,000
Profit		$ –0–

In this presentation all costs take the same unit cost as previously computed. Fixed expenses are based on the rate already established. Management would no doubt reject this offer of new business, since it would result in no gain for the company. However, a second look at this statement would reveal that under the new production order the fixed manufacturing expenses are effected as follows:

Fixed expenses at present		$50,000
Fixed expenses incurred because of additional order		2,000
Total fixed expenses		52,000
Fixed expenses charged into production:		
At present 90% capacity	$45,000	
For 20,000 units of additional production	10,000	55,000
Overabsorbed overhead due to increased production		$ 3,000

When the overabsorbed overhead of $3,000 is added to the no-profit statement above, the gain of $3,000 represents a completely changed picture to management.

DIFFERENTIAL COST STATEMENT

Now to measure properly the expected gain from the above additional production, a differential cost statement would be used, not a historical cost one. If the differential cost is the variable cost and only the additional fixed cost is charged to the additional production, the following differential cost statement would be presented:

Sales (20,000 units at $3.00)		$60,000
Cost of Sales:		
Materials	$20,000	
Labor	20,000	
Variable expenses	10,000	
Additional fixed expense	2,000	52,000
Profit on additional business		8,000
Underabsorbed fixed expense at 90% capacity		5,000
Net Profit		$ 3,000

The net profit of $3,000 as computed in the foregoing statement represents the overabsorbed overhead. In this statement the additional production has been charged with its additional cost only. The unit cost can now be compared with the sales price:

Selling price per unit	$3.00
Unit cost ($52,000 divided by 20,000 units)	2.60
Profit per unit	$ .40

The additional production results in a gain for the company although the selling price has been considerably reduced. Such a costing procedure has a distinct advantage in the making of managerial decisions. The use of differential cost analysis is invaluable to management for the determination of selling prices at various levels of production.

OTHER USES

Another alternative is present when management is faced with the possible shutdown of its plant. In the short run a company is better to continue operations as long as the products sold recover their own variable costs and reduce the fixed costs in some way. But at what price should this product be sold? Many factors must be considered. To continue operations means that the costs of shutting down the plant and then re-opening it are avoided. Also the losses of established markets for the products and experienced and skilled labor are present in a shutdown. Many fixed costs such as depreciation, taxes, etc., are always present whether or not a plant is operating. Here again the flexible budget comes into use. Management must continue operations as long as the differential cost or a little more can be obtained. To arrive at a proper answer, the cost accountant must keep himself oriented on any changes which might force the curtailment of operations entirely.

Some problems of change in market conditions may arise through the application of differential cost analysis when it is applied to a new product which can be manufactured with the existing plant facilities:

1. The manufacturers who have been in the market with the additional product made by the newcomer, costed by differential cost methods and therefore perhaps being sold at a lower price than their product, might retaliate and enter the newcomer's regular market with his product also costed by differential cost procedures. This retaliatory struggle might conceivably lead to a complete reversal of the goods manufactured and sold by these competitors.

2. If such a reversal would take place, the manufacturer who entered the market on the basis of differential cost analysis which included only the variable costs might find that he is now compelled to charge fixed overhead to this additional product.[9]

CONCLUSION

Differential cost analysis requires the re-examination of the results as computed by the conventional, historical cost approach. It deals with the problem of alternatives and the total cost procedure is wholly unsatisfactory to obtain the kind of information on which management can base its decisions. Decisions made on the basis of differential cost analysis need the continuous attention of management in order to avoid the possible shift of differentially costed products ahead of totally costed products.

9) Matz, *op. cit.*, p. 735.

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The Economic SCENE . . .

by W. Allan Beckett

LIVING BEYOND WHOSE MEANS?

THE ANNUAL REPORT of the Governor of the Bank of Canada received widespread publicity and discussion. However, there are a number of issues relating to its basic theme that need further airing.

Are we really living beyond our means? If we are, is this dangerous? Can we correct the situation? What evils will the remedy bring? Or do we have a choice of pleasant-tasting medicines?

Mr. Coyne's case can be summarized briefly. Since 1950, with the single exception of 1952, we have as a nation "lived beyond our means", in the sense that we have purchased more goods and services from other countries than we have sold to them. In 1959, the current account deficit was a record $1,460 millions. The Bank's report attributes this balance of payments problem to excessive overall spending, or strong domestic demand. We have been growing too fast.

In addition, the current account deficit must be financed by an offsetting inflow of capital from abroad. To the extent that we are borrowing, we are drawing on the nations' savings. Another way of saying this, is that we are exporting promises to pay—bonds and other securities, and titles to our national wealth and resources.

Two problems flow from this situation. The first is a "growing degree of foreign predominance in Canadian business." The second consequence concerns the heavy volume of foreign debt—over $15 billion—on which interest and dividends must be paid. These payments amounted to nearly $500 million in 1959 and accounted for a full third of our foreign deficit. Finally, the burden of foreign debt and the payments on it "could one day become a very serious embarrassment in the event of a major decline in the (foreign) exchange value of the Canadian dollar."

It certainly looks like we have been "living beyond our means." But is it really this simple? One factor that has been neglected in the discussion thus far is the changing composition of our foreign borrowing.

In the boom year of 1956, for example, our deficit on *commodity* account was $728 millions and more than 50% of the overall deficit balance. In 1959, the deficit on goods had shrunk to $386 millions and represented just over a quarter of the total of foreign borrowing. Moreover, in both years, a substantial proportion of our imports represented investment goods or industrial materials. In a sense then, we have been "investing" beyond our means, rather than consuming beyond our means. More recently, the percentage of imports represented by consumer goods has been rising significantly.

At the same time that the merchandise deficit has been narrowing (it had turned into a surplus in January and February), the balance on *service* items has widened sharply, from $638 millions in 1956 and less than 50% of the total to $1,074 millions in 1959 and nearly three-quarters of the total. Significant increases occurred in business payments for advertising, insurance, research and patents, in government payments for services and defence, in interest and dividend payments and in net tourist

expenditures. Only a few of these items can be classed in the "living beyond our means" department.

Another way of looking at the shifting character of our foreign indebtedness is to analyze our receipts on capital account. Again comparing 1956 and 1959, there has been a decline in foreign direct investment in Canada, although this item still accounts for one-third of the total capital inflow. Provincial and municipal borrowing rose significantly in the comparison and accounted for about 30% of the 1959 inflow. Corporate borrowing, on the other hand, declined sharply. Trade in outstanding securities was unchanged. The largest increase in the capital inflow was in other items which include changes in commercial accounts, changes in business loans, changes in foreign exchange holdings and Canadian subscriptions to international agencies. Here again, little of the increase can be attributed to profligate spending. Indeed, provinces and municipalities had little alternative but to seek much-needed social capital in foreign markets during the period of scarce and expensive money last summer.

The fact remains, however, that we are increasing our foreign debt, either by investing or living beyond our means. But is it as dangerous as some observers would have us believe? A young and growing nation suffers from capital shortages. Earlier in Canadian history, our deficits ran as high as 12% of our annual national output. The 1959 deficit was about 4%. If a debtor nation uses foreign capital to build up its productive strength, it can continue to borrow abroad for long periods of time. There is no inherent danger as long as the ability, and the opportunity, to service the foreign debt rises in line with it. A mature debtor nation runs a surplus on commodity production to offset much of the deficit on invisible items, particularly the payment of interest and dividends on the foreign debt. Canada may just now be entering the stage of being able to finance its requirements by selling more goods abroad.

However, we may well have reached a temporary ceiling on foreign borrowing, and we may have to be content with a slower rate of domestic growth. This should serve to make us less vulnerable to inflationary forces and more competitive in markets at home and abroad. With the corrective forces already apparently at work, one may well question whether additional policies are needed "to move firmly in the direction of living within our means." What these policies are and how they might work will be the subject of next month's *Economic Scene*.

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The Editor's Choice

DEVELOPING A PRODUCT STRATEGY
American Management Association

Most of this book is the result of a special conference held in February 1954 by AMA. This book is developed in six parts by several authors. The main discussions are Part I—Planning & Organization; Part II—Research and Exploration; Part III—The Product Screening Process; Part IV—From Engineering to Production; Part V—Marketing Plans and Procedures; and Part VI—Financial Requirements. The fact that so many authors of such varied interests contribute to the book points up the fact that AMA stresses; that product strategy is the concern of the management team and not the hoped-for result of a research program alone.

FACING FACTS IN FINANCIAL STATEMENTS
D. Gordon, C.M.G., C.A. Jan. 1960

In this article the author discusses the impact of inflation on financial statements. He reviews the situations that existed in some European countries after the recent major wars and the government tax relief that was granted. A review of the accountant's stand in reflecting erosion of assets and over-expanded income in statements would seem to indicate that he tends to be somewhat stiff in his adherence to "generally accepted principles" and the historical cost approach. This stand has resulted in much external criticism that seems partly justified. The author does not suggest the correct accounting approach, but he recommends careful research and analysis which should result in united decisions carefully and logically supported.

REPORTS WHICH MANAGEMENTS FIND MOST USEFUL
N.A.A. Accounting Practice Report #9, Feb. 1960.

This report is a summary of several authors who contributed papers on the subject. There is a very good commentary on various reports illustrated. The study points up the fact "that the processes of accounting yield reports as their principal product—and that these reports must serve an immediate purpose."

FIVE UNIVERSAL PROFIT PATTERNS
D. H. Sunderlin, Advanced Management, Feb. 1960.

Here in capsule form is a summary of the principles that are used by successful companies, large and small, to generate profits and continue as successful enterprises. Mr. Sunderlin has been criticised as theoretical and unrealistic, but he feels that if these points are understood and applied success will result. The points are: 1) recognition of functions, 2) organization balance, 3) management skill, 4) pin-point responsibility, 5) relative vs. absolute profits. This article can be read in a few minutes, but it may provoke days of thought to appreciate its implications.

BUSINESS GAMES, MODELS AND ACCOUNTING
C. W. Bastable, The Journal of Accountancy, March 1960

In this brief article, the author shows how experiments with games provide interesting accounting insights. He does not suggest that the games and models will change future accounting theory, but he does suggest that the accountant should not leave this area unexplored.

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SALES AND SERVICE ACROSS CANADA

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ORGANIZING FOR PROFIT IMPROVEMENT*

By, D. R. Gilmaster,
Vice-President, Finance, and Treasurer,
Canadian Food Products Limited
Toronto, Ontario.

Real profit improvement goes beyond cutting costs in the most obvious places. It may mean drastic surgery on an oversized administrative set-up and complete re-organization of existing methods. This article outlines a step-by-step approach to improving profits through a basic review and revision of all administrative procedures.

ONCE a company decides to launch a program of profit improvement, its first steps are usually these. It:

(1) Increases selling prices (witness the steady increase in the cost of living during the recent recession)
(2) Slashes the advertising budget
(3) Trims or eliminates costs that can be controlled easily, such as travel, entertaining, dues and subscriptions, etc.
(4) Concentrates on reducing administration costs.

Each of these steps has two characteristics in common:

(1) Action has only been taken in areas where it will cause the least discomfort to management and the company as a whole
and (2) The programs are all concentrated in areas where savings can be shown quickly.

Frequently, there is another predictable stage in the evolution of a profit improvement program—delay. Management is often slow to recognize danger signals and attributes poor results to inaccuracies in accounting that will probably be compensated the next month. When this hope fails to develop, the tendency is to explain away unfavorable results. This state of mind, combined with lack of confidence (justified or imaginary) in accounting statements, can soon reach the point where it becomes a crutch. Only when the crutches have been kicked away and management realizes it must stand on its own two feet or fall is attention focused on those areas where real cost savings can be made. Unlike the four previously named, these areas are much larger and by their nature require long-range studies and programs before the savings start to be realized.

In reaching this stage of the program, administration costs usually come under fire and for good reason. These costs have an unfortunate tendency to creep ever upward. As volume increases, staff is gradually added and quality standards often

* A paper presented at a meeting of the Hamilton Chapter of S.I.C.A. on January 21, 1959.

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deteriorate. Organization and systems become outdated and can only be maintained by adding more people. Parkinson's Law of the inverted pyramid enters the picture and before long the company finds it has acquired a rapidly growing monster which is costly to feed, difficult to control, and has an indefinite life span. This monster usually stays in hiding and no one knows how big it has become until it is finally forced out into the open and a decision to operate is made.

An oversized organization has to be inefficient. As a corollary, it must also produce inaccurate results (always too late), mislead management to a dangerous degree (often to complete ruin), be overcrowded and careless, undisciplined and uncommunicative, and suffer from an advanced stage of poor morale.

GETTING THE PROGRAM UNDER WAY

When embarking on a program of profit improvement, it is vital to have the finance division operating at top efficiency. This division is the nerve centre of the company, the spot where information is channeled from all divisions of the company and processed into statements and reports that will be used at all levels for control and management. This input and processing of data must be carefully controlled.

Whatever the initial emphasis, two main results may be expected from a program of re-organization in the finance or any other division:

(1) Accuracy of output will improve to the point where other divisions can rely on all figures

and (2) The cost of the division will be decreased.

A speaker recently pointed out that most offices were overstaffed by 50%. This is probably quite true in many cases. Certainly it is not too difficult to show a reduction of at least 30% in a comparatively short time. Parkinson's latest law is that "Expenditure rises to meet income" and one of his illustrations is the family that has been living on a certain income for some time. The husband gets a raise and they start to figure how much surplus they can expect to accumulate. They really need not waste their time, however, as the surplus will probably remain unchanged. This is just as true and meaningful in business and is one good reason why such large reductions can be expected.

A profit improvement program can normally be implemented by existing staff but some outside help may be needed, depending on the urgency of the program and the qualifications of the people carrying it out. The steps are simple and straightforward in themselves. The biggest problem is that they all relate very directly to people, their work habits and their future. For this reason, there is very little opportunity for second-guessing. The incidence of wrong decisions has to be low or the program will collapse in a state of turmoil. Following is a step-by-step approach that may be used to some advantage.

I. ORGANIZATION

It is surprising how many companies do not have organization charts. In those companies that do have charts, they are often constructed in a way that confuses the reader or are out of date. The first step, then, is to draw up a complete chart of the existing organization carried down to the supervisory level and supported by detailed individual charts of each section. The name and job title of every person in the division must be clearly shown and line and staff jobs should be clearly distinguished.

The chart should not be published at this stage but used as a reference in designing a new form of organization.

II. TASK DATA

Job descriptions may or may not be available. In any event, it is important to make an up-to-date survey of what people are actually doing. This should be done by each person and approved by his supervisor. It only takes a few minutes to design a simple form that will enable each person to describe the different jobs he performs, the frequency and amount of time involved and, where applicable, the volume of work (such as machine postings). Each person must account for the total number of hours worked.

Caution must be exercised in using this information, however, as each person naturally tends to provide a little pad. Also, people engaged on a common job will work together to ensure that they all submit the same breakdown. In spite of this, the descriptions are still of considerable benefit.

III. PERSONNEL ASSESSMENT

The quality of all personnel must be assessed very carefully. It should go without saying that the success or failure of any system depends on people—the right ones in the right jobs.

The conventional short form of personnel assessment is not adequate for this purpose. It will be necessary to design a detailed form for this initial review, showing date of employment, age, sex, marital status, and salary rate. It must also give information relating to congeniality with co-workers and supervisor, need for training, amount of overtime worked, need for additional education (and are they doing anything about improving themselves now), whether any persons wish to transfer to another section, and a brief summation of their educational background.

IV. SPOTTING PROBLEM AREAS

This information can now be transferred to the organization chart by means of a color or symbol code. By this method, present and possible problem areas can be easily spotted. For example, one problem area may be headed by a supervisor who needs training and additional education with a staff composed mainly of new employees. Or a section may be working an excessive amount of overtime which will adversely affect efficiency and morale.

V. SYSTEMS AND PROCEDURES

Once the file on existing conditions is completed, it is necessary to make a careful study of methods used in each job. When conducting this review, the following points should be kept in mind:

1. Always ask *why* a certain job is being done, even though it may be fairly obvious.
2. Be on the lookout constantly for reports or routines that are not really necessary or could be done less frequently.
3. Review every report issued and examine its frequency and distribution.
4. If a routine or a report cannot be eliminated or reduced, can it be done some easier or faster way or can it appear as a by-product of other published information?
5. Is maximum use being made of all equipment in the section?

6. Examine the performance statistics where available, such as the number of postings per day on a bookkeeping machine, number of accounts payable or payroll cheques handled per day, number of pieces filed, number of orders handled, etc.

VI. PLAN NEW ORGANIZATION

The program has now reached the stage where existing routines are known, personnel have been rated and their jobs reviewed, the organization has been charted and recommendations made for changes in the system. With this information, it is possible to begin drafting a new form of organization that will incorporate all proposed changes.

This is no easy task. The form of organization will be done and re-done before it is put into effect and, even then, last minute changes will probably have to be made. Many additional factors will have to be considered—such as preserving the stature of the long-service employees and many other psychological factors.

VII. DETERMINE THE ESTABLISHMENT

In planning the new form of organization, it is necessary to project the personnel requirements in each section and to determine the grading for each job. For example, if a section should be composed of one supervisor and ten clerks, what level of clerical help is required in each job? How many clerks, grades one, two or three, are required and what are the factors that distinguish one grade from another?

To accomplish this, each job must be studied and rated using the point system. Job descriptions must then be written or up-dated to reflect the distinction between grades. Finally, the new jobs must be assigned to individuals on the basis of the foregoing surveys.

VIII. SALARY SCALE

One very important step remains to be done and that is to pay the people a competitive rate for the job they are doing. The wording of a job description is not enough to distinguish one job level from another. Some incentive must be built into the structure and that can be done best through the pay cheque.

When the salary scale has been established and personnel have been identified with a particular job, their present salaries must be compared with the salary scale. No adjustment can be made to the salaries of persons coming above the maximum scale for the job, but adjustments must be made for those who fall below the minimum salary for the job.

The salary scale should also provide for seniority by incorporating a special level which can only be reached by persons who have been with the company for, say, 15 years.

IX. PUBLISH THE ORGANIZATION CHART

Once these steps have been completed and personnel have been informed of the new form of organization, the new chart can be published. When it is released, however, it is most advisable to ensure that all personnel are familiar with the intent behind the chart—namely, to show channels of authority, responsibility and communication. Unfortunately, many misunderstandings creep into the reading of a chart, whether unintentional or deliberate.

When these procedures have been followed, it will probably be found that a better

job is being done with less people and that morale has shown a general improvement. It is reasonable to assume that a person will do a better job if he is responsible for only five persons instead of ten and that, in turn, each of the five persons will do a better job than each of the ten.

As with other phases of this program, it is possible to predict the program's effect on morale. Morale will probably be fairly low in a company requiring this type of program. But even if it is high, the result will be the same. Morale will deteriorate at first owing to the uncertainty and change. This means that every effort must be made to complete the program as soon as possible so that every person will know where he fits into the new organization. This accomplished, morale will start to improve and should soon reach a high level. This is probably attributable to the employees' change in attitude. The loyal, conscientious employees, when working beside others who are indifferent, careless and lazy, tend to become embittered when nothing is being done to improve the situation. However, the moment they see that their situation is recognized and something is being done about it, they begin to return to their former standards and feel happier knowing that they are not alone in doing a fair day's work for a fair day's pay.

The companies that are probably most in need of this type of program are those that have been in existence for many years. Many of these companies are inclined to be set in their ways and seldom question why a certain job is being done and if it is really necessary. These companies have had their profit ups and downs over a long period of time and, in many cases, do things merely because they are part of a long tradition.

Reference was made previously to Parkinson's Law of the inverted pyramid. To illustrate, a department may be set up with two well-qualified persons who can handle the work load without any particular problems. One of the two leaves and, as equal quality cannot be found at the time, two persons are hired to replace him. Some time later, the other person leaves and the same sequence takes place. Shortly after, the work load increases and another person must be hired. Suddenly, there is a need for a supervisor and the pyramid begins to build.

EXAMPLES OF COST SAVINGS

A brief illustration would enlarge some of the points that have been made:

(1) In one instance, an accounts receivable department had four machines posting customers' accounts and was consistently behind schedule with customers' statement not being mailed until about the 15th of the following month. Surveys were made and it was possible to reduce the number of machines to two with all work being kept up to date at all times and statements being mailed to customers on the first working day of the following month. This was accomplished in spite of a machine supplier's recommendation that another machine be added. In fact, it was proven possible to keep up with the regular work load with only one machine operator but, for insurance purposes, it was decided to maintain two machine operators. This was accomplished mainly by examining the statistics of the machine operators and setting certain standards. Daily charts were maintained showing their performance against the standards and eventually the goal was achieved. Certain changes in systems and routines were also made with the over-all result that staff was reduced in this section 50%—from 16 to eight.

(2) In another instance, the general ledger was maintained on a bookkeeping machine with no typing attachment. All entries were identified by a code and much of the necessary information was missing unless reference was made directly to the vouchers. By substituting a machine with a typewriter attachment, much time was saved in the analysis of accounts and the processing of cheques.

The installation of a system of cents elimination on this machine saved a great deal of time in running the trial balance and making up the several schedules and reports at the end of each month.

At the same time, a new machine with an intercoupler attachment was installed in the purchasing department. This provided the department with a visual record and, as a by-product, cards were punched for processing through tabulating and integrated with costing and inventory reports.

(3) Stationery costs can usually be improved. For example, in one instance, stationery was stored in several locations. Once it was centralized and a requisitioning system installed, costs started to drop. In another instance, a multilith showed a marked saving in forms cost.

(4) Systems and procedures having common characteristics should be standardized. In one instance, five different payroll methods and three systems of accounts receivable were being used as the result of a merger of several companies. Standardization resulted in substantial savings.

(5) Different situations call for different methods. The systems and procedure analyst should always be flexible in his approach to the problem and not let personal preferences enter into a decision. For example, the general ledger on punched card equipment may prove to be a complete bottleneck in one company yet it may be the answer to the problems of another. This will depend upon the nature of the operation and the number of times the input must be processed in different forms.

(6) It may be necessary to spend money to save money. For example, it may be desirable to set up an internal audit department at considerable cost to effect savings that will not show as reductions in accounting costs but will make a major contribution to overall company profit—once again, depending on the nature of the company's operations.

While surgery will reduce the size of the monster, make it easier to control, and cheaper to feed, it must not be allowed to go back into hiding where it can start to grow again.

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TOPICAL comments

LOOKING AHEAD

More than $1,000 million will be spent on Canadian highways in the coming fiscal year. All provinces have substantial road programs planned and Ontario alone will put out $253 million. In the next decade, Canadians can look to prospects of a national highways plan, uniform traffic markers across the country, completion of paving of the Trans-Canada Highway and increased emphasis on research and safety. (*Fin. Post, Mar. 26/60*)

An expanded research program will be undertaken this year by the American Institute of Certified Public Accountants aimed at narrowing areas of difference and inconsistency in financial reporting. The program, according to the Institute's president, is likely to cause changes in "generally accepted accounting principles" affecting not only CPAs but every organization concerned with the preparation or interpretation of financial statements.

New products parade includes some highly versatile items for the innovator such as the tie clasp and cuff link set that doubles as thermometer and slide rule, sunglasses with built-in transistor radio, the swimsuit that converts to a cocktail dress and the lighted umbrella that guides the way on dark nights. (*Bus. Week, Mar. 19/60*)

OF GENERAL INTEREST

What is the prevalent policy on office machines and furniture? A recent NOMA survey of 1,500 North American companies shows:

- 20% of companies rent office machines while only 2% rent office furniture
- 58% standardize on machines—51% on furniture
- 32% have formal replacement policies on machines—38% on furniture
- 57% have depreciation policies on machines—80% on furniture
- 87% have service agreements covering machine maintenance.

The Canadian standard of living ranks second only to that of the U.S. Here are the seven leaders in average per capita annual income based on United Nations sources:

United States	2,075
Canada	1,405
United Kingdom	875
West Germany	700
France	700
Italy	700
U.S.S.R.	550

Mobile homes are on the increase. Last year Canadians paid out $32 million for some 5,000 mobile home units and 2,000 travel trailers, of which 53% were manu-

factured in Canada. More than 200 mobile home parks have sprung up to accommodate them offering complete facilities from water and electric services to landscaped lots. (*Can. Bus., Apr. 1960*)

Some 1959 Traffic Accident Statistics:

- One out of every 197 Canadians was injured in a traffic accident during 1959, totalling 4,000 more than in 1958. There were 15,000 more motor vehicle accidents in Canada in 1959 than in 1958—a 6.3% increase.
- One person was injured every 6¼ minutes all year long. During June, July and August a Canadian was injured in a motor vehicle accident every five minutes. August was the worst traffic accident month with over 1,000 more injuries than in any other month.
- Thirty-five percent of accidents occur during hours of darkness when less than one-quarter of the driving is done. Approximately 30% of accidents take place between 4 and 8 p.m. with more accidents occuring between 5 and 6 p.m. than during any other hour. About 20% of all accidents happen on Saturday.
- Nine out of every ten drivers involved in accidents were male. Approximately 28% of all drivers involved were over 15 and under 25 years old and approximately 10% of all drivers were from 16 to 19 years old.
- From January through June, there were 46 fatalities per week. In June through December there were 77 per week.
- More than 30% of persons killed were under 15 or over 65 years of age.
- Approximately 80% of fatal accidents take place in clear weather.
- Canada's 30 cities with populations of over 40,000 representing 35% of Canada's population accounted for less than 15% of traffic deaths. (*Fin. Post, Mar. 26/60*)

ON THE PERSONAL SIDE

Looking for a job? Better check yourself on these points stressed by a number of personnel interviewers:

Is your appearance all it should be? Sloppy grooming and sporty clothes can kill your chances quicker than anything. An executive must be well-groomed and a tie, coat and pressed trousers are required wear for the interview.

Brilliant marks do not appear to carry as much weight as a co-operative attitude and the team spirit. Interviewers lean toward the well-rounded personality and a record of participation in extracurricular activities.

Do not try to impress with a good family background or apologize for a less than impressive one. Candidates are judged on themselves alone and interviewers are inclined to look favorably on the man who has worked his way through school.

Do not be overly-aggressive or overly-humble. Interviewers look for the man who can handle himself well, moderately and discreetly, in all situations.

Be on guard against such things as bad grammar, incorrect spelling on application forms, being late for interviews and smoking when not invited. Interviewers look for alertness in response and posture, ability to speak up well and some evidence of good manners. (*Fin. Post, Mar. 26/60*)

THE LEARNING CURVE*

By J. N. Siersema,
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The use of the learning curve in cost control is subject to the limitations of a statistical method. It is useful by itself or as a speedy method of confirming cost estimates arrived at by other means. This thesis describes the theory and application of the learning curve and demonstrates its use in actual practice.

THE LEARNING curve is the graphic representation of the fact that when the total quantity of units produced doubles, the cumulative average cost is a constant percentage of the cumulative average cost of the quantity doubled. *Example*: When the first 10 units average 1,000 hours each and the learning curve is 80%, then the first 20 units will average 80% of 1,000 hours, or 800 hours each. This can be continued indefinitely, so that the first 40 units will cost 80% of 800 hours or 640 hours, and so on.

Raymond B. Jordan, in "Learning How to Use the Learning Curve", defines it as follows: "The theory of the learning curve is that whenever the total quantity of units produced doubles, the cumulative average cost per unit declines by a constant percentage."

Apart from the fact that it does not answer the question, "What is a learning curve?" it indicates the 20% complement of what it is supposed to be, namely 80%.

This concept should not be confused with another one prevalent in the industry which could be defined as follows: The learning curve is the graphic representation of the fact that the cost of a unit is a constant percentage of the cost of that unit halfway in numerical sequence. (*Example*: If Unit 1 cost 1,000 hours and the learning curve is 80%, then Unit 2 costs 80% of 1,000 hours, or 800 hours, and Unit 4 costs 80% of 800 hours, or 640 hours.) It would appear that this is a misconception as compared to the original concept of the learning curve and it will therefore be ignored. An example of this approach can be found in the article by Frank J. Andress, "The Learning Curve as a Production Tool."

The learning curve was first observed in the aircraft industry during World War II, and Mr. T. P. Wright, of Curtiss Wright Corporation at the time, did vast research work in this field. He found the 80% curve prevalent in the aircraft industry, and this curve is commonly referred to as the "Curtiss 80% curve."**

"Learning curve", as such, is a misnomer. The name was given when the first observations were made of the phenomena of steady reduction in cost when quantities are doubled, and the first contributing factor, "learning", (that is, increased efficiency because of the repetition of an operation) was found. As will be explained later, there are many factors besides learning.

Others have called it "experience curve" which appears to be a better name. It

* Condensation of a thesis submitted for R.I.A. qualification.
** "Projecting Labour Loads in Aircraft Production" by P. B. Grouse.

John N. Siersema studied Economics at the University of Amsterdam, Holland, and was employed in several staff functions in the paper industry before coming to Canada in 1951. He joined Fleet Manufacturing Ltd., Fort Erie, as a time keeper, rising through a series of promotions to the position of Chief Cost Accountant, before he left for his present employment in 1956.

should be understood that these curves were found by experience, and there has been no theoretical explanation. The cause of this is that a great number of unpredictable factors are prevalent; individually these do not show any specific trend, but when combined the regularity of the curve becomes apparent.

The lack of a scientific explanation probably accounts for the lack of literature on this subject. The use of learning curves is an art, as medicine was an art a few centuries ago. The outstanding fact is, however, that learning curves have been used in the aircraft industry for nearly two decades and accepted in practice. As such it cannot be overlooked and should be and is explored.

A thorough knowledge of learning curves can assist management, engineering and accounting in many ways, but one should always be cautious in using it and should look for other methods to confirm the conclusions drawn. If this is not done, one may find that the use of learning curves can be disastrous.

GRAPHIC REPRESENTATION, MATHEMATICAL EXPLANATION, USE OF TABLES, ARITHMETIC REPRESENTATION

Arithmetic Representation

Exhibit 1 shows an 80% learning curve plotted on regular graph paper, the first unit costing 100 hours. The hours are plotted on the Y axis, the unit number on the X axis. It shows how the reduction is very rapid in the beginning and levels off later on. Note that this represents the *cumulative average* cost, not the cost per unit. The line of cost per unit will be below it; on the exhibit the first four points of this curve have been plotted.

It will also be apparent that as the curve progresses it will level more and more until it becomes, for all practical purposes, a straight line running parallel to the X axis. (*Note*: The latter is a prerequisite of standard costing. If we are to rely on the learning curve, standards would have to be changed every few days, after that every few weeks, then every few months and finally every few years. Thus the learning curve shows an interesting practical limitation of the standard cost system.)

The arithmetic representation, although essential to an understanding of the learning curve, finds few applications.

Logarithmic Representation

Exhibit 2, solid line, shows an 85% learning curve on log log paper. The hours are plotted on the Y axis, the units on the X axis. The important fact is that the curve in the arithmetic representation appears as a straight line on the logarithmic one, with a consequent gain in accuracy in plotting. The cost per unit line runs below and parallel to the cumulative average unit line. This representation should not be confused with the arithmetic one.

Mathematical Explanations

The learning curve is a geometrical series whereby each point is determined by multiplying the previous point by a common ratio; this line belongs to the family of log curves of the Y - X - k type, where k governs the slope of the curve.

Cumulative Average

Let the empirical relationship for cumulative average cost be $\overline{C}_n$ for the n^{th} unit.

The formula is then $\overline{C}_n = C_1 n^{-k} = \dfrac{C_1}{n^k}$

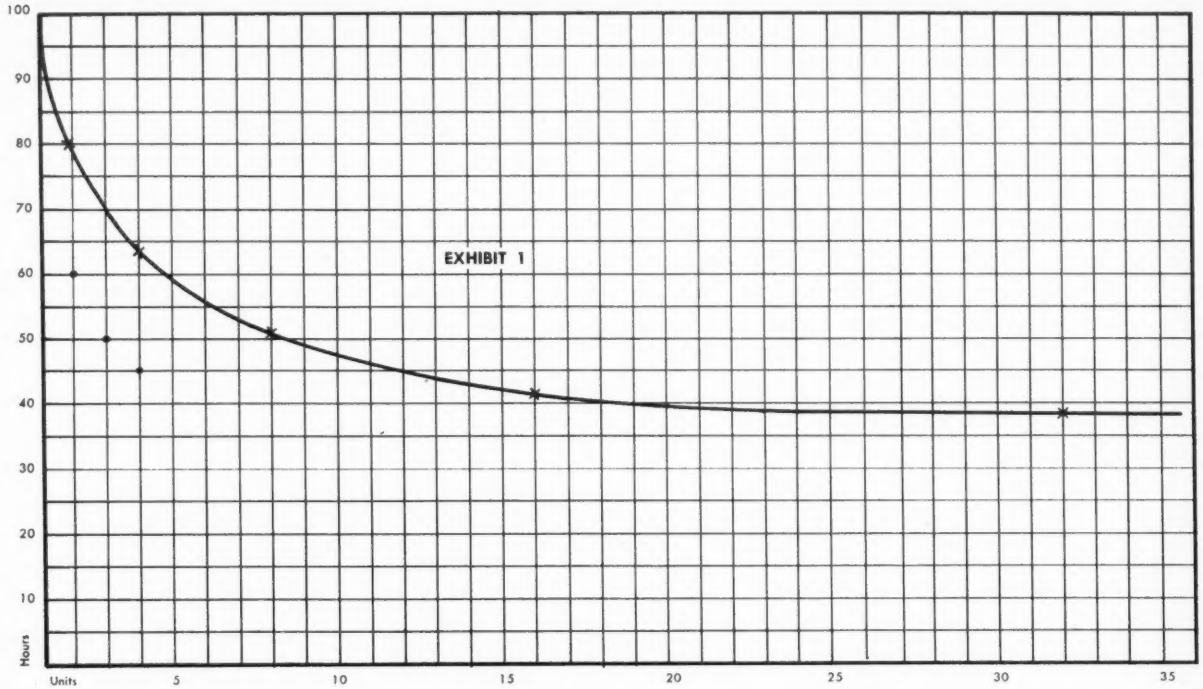


EXHIBIT 1
100
90
80
70
60
50
40
30
20
10
Hours
Units
5
10
15
20
25
30
35

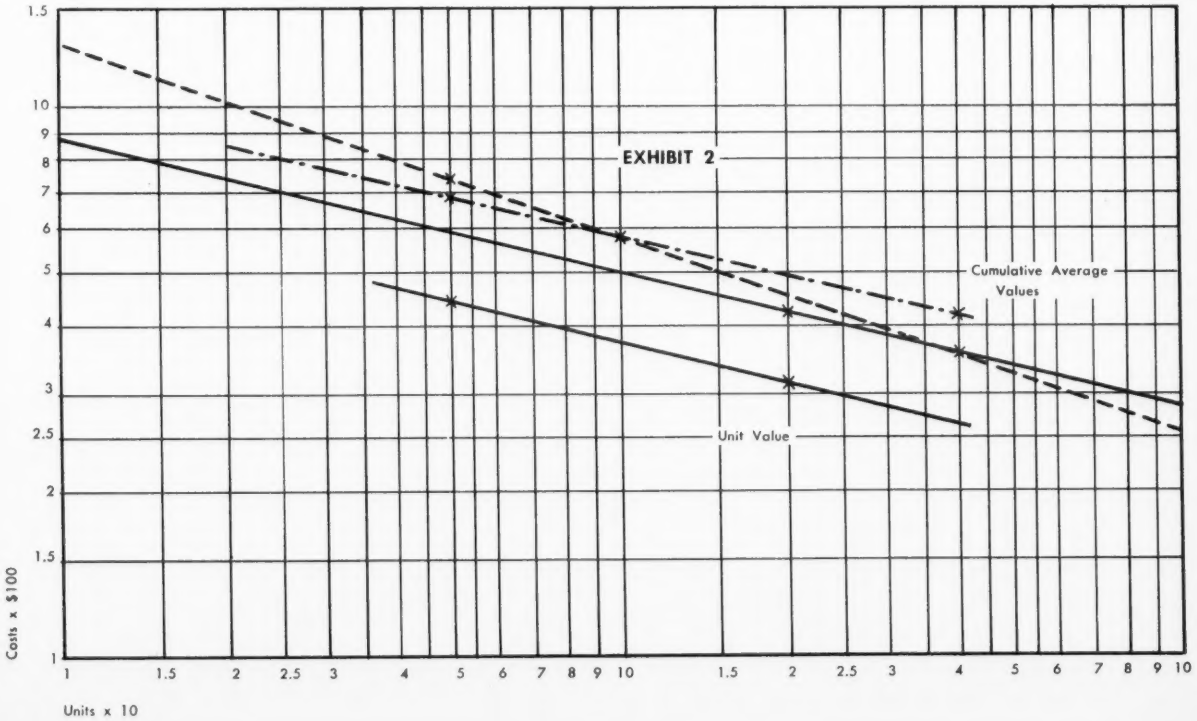


EXHIBIT 2
Cumulative Average Values
Unit Value
Costs x $100
Units x 10
1.5
10
9
8
7
6
5
4
3
2.5
2
1.5
1
1 1.5 2 2.5 3 4 5 6 7 8 9 10 1.5 2 2.5 3 4 5 6 7 8 9 10

Where C_1 is the cost of unit 1
k is derived from the percentage of learning curve P.
Where P is fraction to which cumulative average cost has dropped when the number of units is doubled.

$$\therefore P = \frac{\overline{C}_{2n}}{\overline{C}_n} = \frac{C_1(2n)^{-k}}{C_1 n^{-k}} = 2^{-k}$$

$$\therefore \log P = -k \log 2$$

$$\therefore k = \frac{-\log P}{.0310} = -\log P = -3.32 \log P = 3.32 \log \frac{1}{P}$$

The different value for k for different curves is shown.

Example:

Given: an 80% learning curve, cost of first unit 100
Required: the cumulative average unit cost for unit 32

$$k = 3.32 \log \frac{1}{80/100} = 3.32 \log 1.25 = 3.32 \times 0.097 = .322$$

$$\overline{C}_{32} = \frac{100}{32^{.322}} = 32¾$$

For values of k for the different curves see Table 1.

Unit Cost

The next step is to arrive at the unit value of unit C_n

Starting out with $\overline{C}_n = \frac{C_1 + C_2 + \ldots + C_r = \ldots . + C_n}{n}$ by definiton we can derive the formula $C_n = (1-k)\,\overline{C}_n$.

The values for (1–k) for different curves are shown in Table 1.

Example:

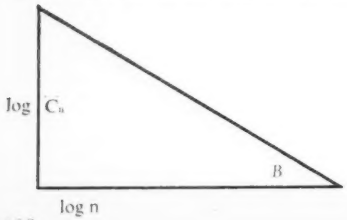
Given: an 80% learning curve, cost of first unit 100.
Required: the cost of unit 32.

$C_{32} = .678\,\overline{C}_n$ $\quad$ $\overline{C}_n = 32¾$ as in previous example.

$C_{32} = .678 \times 32¾ = 22\ 1/5$

Angle of Curve

The angle of the curve *B* can be found since the tangent of



$$B = \frac{\log \overline{C}_n}{\log n}$$

The angles for the different learning curves are shown on Table 1.

Use of Tables

Table 1 gives the information needed to arrive at accurate figures in the use of learning curves. It should be understood, however, that great accuracy in the use of learning curves is not particularly useful since learning curves as such are only approximations.

TABLE 1

Learning Curve	k	1–k	Angle of Curve
70%	.515	.485	27°
71%	.494	.506	26°
72%	.474	.526	25°
73%	.454	.546	24°
74%	.435	.566	23½°
75%	.415	.585	22½°
76%	.396	.604	21½°
77%	.377	.623	20½°
78%	.359	.642	19½°
79%	.340	.660	18½°
80%	.322	.678	17½°
81%	.304	.696	16½°
82%	.286	.714	15½°
83%	.269	.731	15°
84%	.252	.748	14°
85%	.235	.766	13°
86%	.218	.782	12°
87%	.201	.799	11°
88%	.185	.816	10½°
89%	.168	.832	9½°
90%	.152	.848	8½°
91%	.136	.864	7½°
92%	.120	.880	6½°
93%	.105	.895	5½°
94%	.089	.911	5°
95%	.074	.926	4°

The angle of the curve will for the most part be used to plot the curve on log log paper, and values can be read from the log log paper from there on in. As soon as greater accuracy is required it is better to turn to the established practice of time studies, etc., because by the time this greater accuracy is required the level part of the curve will have been reached and "learning" becomes a relatively unimportant factor.

CIRCUMSTANCES UNDER WHICH IT IS USEFUL

It appears that the learning curve finds applications in two types of industry:

(a) the industry that finds a fast rate of obsolescence for its product and consequently is forced to start production before design and development are finalized and tooling is completed, and

(b) the industry that makes a highly complicated product in limited quantities.

It is obvious that with the accelerated rate of technical progress the number of industries under these headings is on the increase. Two decades ago the aircraft industry was the outstanding example. Today electronics and nucleonics are added. Where the fully automated plant will show scarcely any learning curve at all, the maker of the tools used in automation will show an exceedingly high learning curve since only a small number of automated plants can supply the demand for a product.

The problems implicated by the above are staggering when viewed from the standpoint of the cost estimator and cost accountant. Mass production cost techniques become useless and a proper substitute has yet to be found.

Missile production is a typical example. The technical difficulties encountered here cannot be foreseen. The cost of the first few units is exceedingly high. By the time standards can be set production is stopped, since the missile has become obsolete, and only a trickle of spares is produced.

Although the learning curve has strict limitations, it is useful in many ways. Experience has shown that the learning curve can also be applied to costs in total, as well as to the labor hours, or labor costs referred to up until now.

Material costs, which are essentially the costs of bought out complicated parts and subassemblies in this type of industry, are apt to show a learning curve, which is obvious since the problems encountered by vendor or sub-contractor are the same as those of the industry.

By the same token, overhead costs will follow the labor costs when these are tied in to direct labor. Experience has shown that the total of labor, overhead and material follows a learning curve. The behaviour of overhead has not been studied by the writer since it is too complicated and extensive to be covered in this paper. It is the writer's opinion that were there a correlation like that found in overhead costs, a useful tool would have been discovered which would overcome many of the difficulties encountered in the industry where truly flexible budgets are concerned.

Sometimes the learning curve is the only answer to management questions as in the case where a quotation has to be made on short notice without having access to all information needed for a proper estimate. This has resulted in the aircraft industry in quotations based on pound-aircraft. This application in the electronics industry with its miniaturization would not be called for.

Some of the factors responsible for the learning curve are set out below:

1. Increased efficiency of the work through repetition of the operation and, as production increases and more workers are hired, through specialization. The labor rate will also be higher in the beginning since the proportion of skilled workers will be higher.

2. Improved and additional tooling. Here the time pressure is evident. Production is often started with little or no tooling so that the first units are practically hand-built. As time passes, temporary tooling is made up to be replaced at a later time by permanent tooling.
   What is said for tooling applies also to methods. The pressure of time will force a supervisor to overlook many inefficient methods and defer changes until he can properly look into the matter. This may seem a highly irregular procedure in the mass production industry but the fact remains that the urgency of early delivery precludes an adequate analysis of methods, and an attempt to improve

on this may actually impede production.

3. Improved design toward ease of manufacture and cost reduction. This factor has two effects: it increases the cost of early units and decreases the cost of later ones. The cause of this lies in the fact that design often has not been completed or else not proved, parts as made will not fit and are scrapped and charged to current production. These errors in design are later superseded by design improvement as the design department gets an opportunity to review its work and suggestions from the production people are received. Of course, this again results in the old model parts being scrapped.
4. Improved supplies. The problem here is that this type of production often requires special materials and parts that are in short supply. As a result, material shortages frequently appear at the start of a program and gradually disappear as sources of supply are established and inventories are built up.
5. Other factors, such as improved clerical, administrative and personnel services as time goes on.

From the foregoing it is obvious that the human element is the one responsible for learning; labor and organization are the root of the contributing factors. In machine operations there will be little or no learning, the capacity of the machine governs the output; in assembly, however, it comes into full play.

R. B. Jordan, in "Learning How to Use the Learning Curve", observed the following trend:

75% Assembly labor, 25% Machine labor	80% Curve
50% Assembly labor, 50% Machine labor	85% Curve
25% Assembly labor, 75% Machine labor	90% Curve

This may or may not be true, but the trend indicated is correct. Were an industry to find that an 85% curve is prevalent and the cost on a certain item follows the 80% curve, an analysis of the labor would show that the proportion of assembly labor is greater than that of the other products.

In concluding the "theory" of the learning curve, it can be stated that the curve is in effect in every industry, but its practical value would be relatively low in most industries since they are too far along the learning curve for it to show an appreciable slope. Properly set, standards periodically adjusted will be much more effective and accurate. The only value of learning curves would then be in calculating the starting-up cost of a product line.

THE COMPANY DESCRIBED

The following description is given to indicate the climate in which this particular learning curve is prevalent.

The company, employing about 50 persons, manufactures a high frequency electronic tube with very specialized applications. These tubes are made for different frequencies in different sizes. The production run for a particular type may run from 25 to 500. Continued production of a tube type is rare. The majority of types are put in production before development is finished. The production of a tube type is usually along the following lines:

1. The engineering and planning stage which involves design and other desk work; the making of a few elementary pieces and assemblies.
2. The preproduction and tooling. Preproduction results in the making of one or

more prototypes of doubtful sales value.

3. Production, which starts at the earliest possible moment and may overlap the preproduction stage.

Phases 1 and 2 are amortized over later production unless paid for by the customer. The procedure in manufacturing is as follows:

1. The machine shop makes the simplest kind of parts tooling and produces a small quantity of parts to extremely close tolerances. As soon as the parts are proved, an outside source is found, except for the production of those parts needed to keep the machine shop loaded. A small pilot run is maintained for some time as a reserve in case the outside source fails to meet standards.
2. The parts made or bought out are closely inspected, cleaned, most of them plated (copper, silver or gold), and fired to rid them of any gases on or near the surface. Even the smallest contamination of the plating solution may cause parts to blister and will render them useless. In case of blisters, which may also be caused by wrong processing by outside sources, assembly has to be halted until the blistering is overcome since it is not feasible to plate too many parts ahead of assembly.
3. The parts are subassembled by hand under the microscope in jigs and the subassemblies are brazed electrically or electronically in a reducing gaseous surrounding, usually in furnaces. The subassemblies in turn are assembled with other subassemblies and again and again until the final assembly is made.
4. The final assembly is exhausted and tested, finished and tested, held for aging and final tested.

Although the most modern and efficient equipment is used by any standard, the assembly remains to a high degree hand assembly performed by operators who have gone through a long period of training.

In spite of this, scrap before exhaust is high and yield after exhaust low in the early stages of the program. Redesign and experiments are the rule to overcome these losses. Tooling is not materially improved until after a shakedown period for these reasons.

Costing is done on a process cost basis for each production run, resulting in a mixed process and job cost system. In the early stages labor costs may be understated because supervisory personnel does a great amount of actual work. Labor and material costs are charged directly to the production run involved. Overhead costs are departmentalized and allocated on the basis of direct labor dollars. Overhead is allocated this way because the higher paid worker is usually involved in a more difficult and complicated technical process requiring more help from supervision, a larger share of expensive supplies and more space.

The job order system is designed to give the minimum of information needed and a maximum where needed by activating dormant parts.

Maintenance overhead is prorated on the basis of maintenance labor charged to the departments. Processing costs are charged to assembly, factory administration costs to manufacturing management. Building costs are charged to the departments on the basis of space occupied. Manufacturing management expenses are prorated over the production departments on the basis of direct labor dollars.

Costs are on an actual basis and are compared to budget as set for the current

fiscal year. In analyzing the costs to budget, developed budget figures are used to segregate differences because of sales variances and differences due to cost variances. In the latter analysis learning curves are constantly used.

Material is controlled by issuing at the beginning of the month parts allowed for required production. In case of shortages it is easily established whether these are due to high losses or ahead-of-schedule position.

Overhead is controlled by the use of departmental overhead costs to budget reports and close scrutiny by the purchasing department before ordering.

Reports to management are on the basis of reporting by exception unless otherwise required.

COST ESTIMATING

There is no cost estimating department. Cost estimates are the combined effort of engineering, production, purchasing and cost accounting, under the supervision of the general manager.

The procedure followed is best described by example: A request for quotation is received for a quantity of 400 tubes of a type not produced before, except under laboratory conditions. A quick look is taken by comparing this tube with a comparable type in production and a difficulty factor is estimated. A difficulty factor of 50% would indicate that the cost of this tube would be 150% of the comparable tube.

The next step is to establish labor and material costs of Unit 50 which would exclude the initial shakedown and then the labor and material costs of Unit 200 which would be representative of a unit once the tube is in regular production. This last cost figure should tie in fairly closely to the figure arrived at by the difficulty factor. If there is a discrepancy, both conclusions will have to be analyzed to explain this difference. This may appear to be a rather inaccurate procedure, but it should be understood that there are no exact means of estimating the costs because of technical difficulties. Thus in actual fact a number of approaches is used, all more or less inaccurate, but the conclusion drawn from these approaches give, as experience has shown, a high degree of exactness.

Points 50 and 200 have now been established; 50 and 200, on the basis of labor and material estimates, are $440 and $307 respectively; the value found by using the difficulty factor for unit 200 is $315; the 2% difference can be considered negligible.

Point 50 and 200 are now plotted on log log paper, (Exhibit 2) and with a protractor the angle of the curve is established to be close to 13½° which, as Table 1 indicates, is an 85% learning curve.

Experience has shown that an 85% learning curve is normal for this industry. Had the curve shown another slope (for instance, an 82% curve), there would be an indication that there is a larger percentage of assembly than normal. This of course can be easily checked. Should it be found that the proportion of assembly is the same as for other types of tubes, then an analysis of the other estimates must be made as they probably contain errors.

From the unit value we can now calculate the average unit cost curve by using the formula $C_n = (1-k)\,\bar{C}_n$ which reads for point 200 (using Table 1) $307\frac{1}{2} = .766 \times \bar{C}_{200}$. $\bar{C}_{200} = 415$. $\bar{C}_{200}$ is now plotted on log log paper as shown in Exhibit 2. A 13½° curve is plotted with the protractor. $\bar{C}_{50}$ is calculated as proof (575). (Proof calculation not shown.)

From this curve it can be established that the average cost for the first 400 units will be $350. The cost of the 400 units will be 400 x 350, or $140,000.

If it has been found that the different estimates dovetail nicely, very little in the way of a contingency has to be added. In the above example all the difficulty factor estimates came close; the difficulty factor was out only 2%, so that a 2% - 5% contingency should be sufficient. Experience will show what percentage of contingency will be needed for the different results in estimating.

COST CONTROL

From the point of view of cost control the learning curve is extremely useful, as shown in the following example:

An order is received for 400 units of an item never produced before except under laboratory conditions. The estimated cost used as a base for the selling price was $350 per unit. A 5% contingency is allowed for errors in this estimate. Experience has shown that the learning curve in the company is 85%. The run is broken into eight lots of 50 units for costing purposes.

Production is started, and after the first 100 units it is found that the actual costs for these units amount to $48,900, or $489 per unit. Management, of course, realizes that the cost of the first 100 units will be higher because of start-up costs. The production manager will point out that labor costs per unit are decreasing and should continue to improve for quite some time. It is obvious that under these circumstances the performance cannot be properly judged and any statement made is an opinion based on intuition and experience.

The answer lies in the learning curve. When this curve is plotted as in Exhibit 2 (solid line), it shows that the average cost of the first 100 units is somewhere in the neighbourhood of $493 compared to an actual of $489, and costs are 1% too high. On this basis one can state that costs are satisfactory since costs are well within the 5% contingency.

The above illustrates how once the cost budget is set the cost can be checked along present lines.

The question arises: what if the costs had been $575 per unit, or nearly 20% above the expected figure? Again the learning curve can provide the answer. In order to stay within the cost budget, a new curve has to be followed of which two points are known. Unit 100 will be $575. Unit 400 will be $350. This curve is now plotted as in Exhibit 2 (broken line). Using the protractor we find a 19° angle for which Table 1 shows a 78% learning curve.

Experience has shown that a 78% learning curve was never achieved in the company. This, of course, does not rule out its possibility. Until now the cost result of the first 50 units has been ignored. According to the new curve the cost for these units is $730 per unit. If the actual is within 5% of this figure then we can assume that a 78% curve is being followed, and there will be no reason for alarm provided this curve can be maintained. A check with production personnel will soon indicate whether the assembly percentage is higher than normal and whether they expect to effect considerable savings in the future. It should be pointed out, however, that the conclusion arrived at is considerably less valuable than the one arrived at above, since there is uncertainty whether a 78% curve can be maintained. A case like this certainly should be brought to the attention of management and production people.

A second variation on the above example is that the cost of the first 50 units is not $730 but $675. Again we have two points of the curve known—point 50 at $675, point 100 at $575. This curve plotted on Exhibit 2 (dash-dot line) shows an angle of 13½° and as shown in Table 1 represents an 85% curve, which is the normal curve for this type of company. Indications are now that the average cost for the run will be about $420 against an estimate of $350, or more than 20% above estimated cost.

It is doubtful whether this knowledge would reduce future costs to an appreciable degree since it is apparent that the estimate was too low. However, the information thus obtained can be valuable for price renegotiations or for pricing of follow-up orders. And this at an early date, since little more than 25% of the production has been completed.

APPLICATION IN TIME AND APPLICATION IN QUANTITY

One of the difficulties, once the percentage of the curve is known, is the level at which the curve is set. One of the considerations in setting the level will be the level of activity. Whether one produces 100 or 10 of a unit per period will most certainly change the unit cost under any circumstances, assuming that no capacity problems occur.

In the type of industry covered, the normal picture of a production run is as follows: a slow build-up accelerating to the maximum production, a relatively short period of maximum production (maybe six months to two years), then a sudden cut to a lower level of production activity when the main production is finished and the spares orders are started.

How much will costs increase when a sudden change in the level of production activity occurs? An analysis of labor costs for a certain tube type shows the following available data:

Monthly Production	Hours per Tube
10	20
50	14
200	10

Where these data are plotted on log log paper a straight line can be drawn through the three points, which line has a 13½° angle and thus indicates an 85% learning curve, the one prevalent in the industry.

An analysis of the total costs at each of these levels shows the same pattern as for the labor hours. Thus the deduction can be made that quantity variations also follow the learning curve. This conclusion, which so far has been proven only twice in the company concerned (due for the most part to the fact that those were the only two types that went through such a wide range of production activity), may seem premature. However, as more data become available, experience may tend to confirm the facts established. There are no indications that others have observed this trend although R. Bennick in "B.E. Charts Reflecting Learning"* seems to imply the same thoughts.

APPLICATION IN COST REDUCTION

This application in a cost reduction program can be of value in indicating quickly whether certain reduction efforts will be effective.

*N.A.A. *Bulletin*, June 1959.

Assume that a new process is being considered because of expected cost savings, and that a pilot run is put into production to see whether this process is technically successful. A pilot run by its nature is a costly affair and once the costs have been established it may discourage the use of the process in question. Production costs would be below the cost of the pilot run but again the conclusion might be drawn that the process is too costly. This, however, is no reason to give up, because even the most intensive study will never reveal the possible improvement that can be made once the process is in actual production. Thus the learning curve enters the picture and may show that where the process is rejected as too costly on the basis of pilot run and production study, it will be acceptable when the learning curve is applied. The following example will illustrate this:

Two tube types, A and B, are produced. A has a cathode with a glass subassembly, while B has one with a ceramic subassembly. Tube A is produced at the rate of 100 a month. Type B is produced at the rate of 10 a month. The cost of the subassembly as used in A is $3.00, and $6.00 for the one used in B.

It is felt that part of the scrap in the production of A is due to leaks caused by the glass component. This, however, cannot be firmly established. Under the circumstances it is considered advantageous to use the ceramic component in the production of A. In approaching this problem it would seem that an extra $3.00 per tube A would have to be spent in order to achieve a rather doubtful improvement. On this basis the suggestion might be rejected out of hand. The argument against this is that the increase of production of ceramic components from 10 to 110 per month would reduce the unit cost. The question of how much is answered quickly by applying the learning curve.

Plotting point 10 at $6.00 and drawing a curve at a 13½° angle (for an 85% learning curve) shows a value of $3.35 at point 110.

Now the choice is between the alternatives of $3.35 and $3.00 rather than $6.00 and $3.00. In this particular instance it was decided to accept the new process.

It should be realized that the same results would probably have been arrived at through means of extensive tool design, time studies and methods studies, although the answer by this method would tend to be higher than $3.35. (*Note*: It will be apparent that in all examples the values are found by using log log paper rather than by the use of mathematical formulae and tables. The former method, although slightly less accurate, is considerably faster and prevents mathematical error. The only items used for this method are log log paper (2 and 3 cycle), protractor and calculator or slide rule.)

PURCHASES AND SUBCONTRACTS

In purchasing or subcontracting parts for production, production difficulties are passed on to the vendor. The vendor has the problem of manufacturing parts, or subassemblies, in limited quantities and incorporating numerous modifications. Consequently the vendor's costs will follow the learning curve.

It has been pointed out that in the industry described pilot runs are produced before the work is passed on to the outside vendor. Therefore the cost level is established before the work is subcontracted. Where the buyer has a good knowledge of the vendor's facilities, it is not difficult to translate this cost level into the cost level of the vendor.

To find the learning curve for the vendor's operations is of course more difficult. It can be assumed that the vendor's learning curve will be nearly the same as the one for the buying company, or slightly higher since the vendor will be more specialized, i.e., the vendor has more and better machines, and the machining content will thus be higher.

In one instance it was discovered that a vendor actually made use of a learning curve which was the same as for the company described, (85%). The vendor was a highly specialized machine shop producing parts to close tolerances. The vendor would quote using the 85% learning curve on quantities of 50 or more, but would take only quantities of less than 50 on a cost plus basis, with exceptions.

The last fact is of great importance. Experience has shown that the cost of the first few units rarely follows the learning curve, and that the learning pattern shows only after a certain number of units has been produced. The number of units will vary from company to company and from part to part.

In the following example the learning curve is applied to a part that follows the curve from the first unit on because it is extremely complicated and requires a considerable amount of labor.

The part in question was manufactured in a pilot run of three units. The times for these units were 50, 37 and 32 hours respectively. It was then decided to subcontract the part to a vendor whose learning curve was 85%, with an hourly rate of $4.50.

The lot to be subcontracted was 20 units.

On the basis of the pilot run it could be assumed that the new run would start at 50 hours. The purchasing agent in his survey of vendor's facilities felt that the vendor should be able to manufacture the part at 80% of this time, since his equipment was more suitable.

The first unit would thus take 40 hours and follow an 85% learning curve, resulting in a 20 hour cumulative average at an hourly rate of $4.50. The cost per unit as quoted by the vendor should then be in the neighbourhood of $90.

ACCOUNTING AND BUDGETING

The question now arises as to what is the value of the learning curve in accounting. To the accountant the learning curve is a tool used in the most important field of accounting: analysis and interpretation.

It is obvious that when production is in its early stages costs may exceed the selling price. The income statement in showing a loss is definitely misleading. It may be a good conservative way of accounting, but these losses will always alert management where there is no reason for alarm.

There are three ways open to the accountant to reveal the truth:

1. To show budget figures indicating that the loss position was expected and normal
2. To make a footnote to the effect that learning accounts for the loss and that the loss will be compensated for during later production
3. To incorporate the learning curve when establishing cost of sales

This last method would eliminate the problem altogether. From the facts available, a learning curve can be projected and the cost figure for the whole run can be established. This figure is used for cost of sales. The excess costs are either left in process or set up as unamortized learning. Both behave the same from the accoun-

tant's viewpoint.

This solution is not in keeping with accepted accounting practice. Consequently an acceptable solution has to be found, and this would be the first alternative above, that of showing a comparison with budget figures based on the learning curve experienced. This comparison should be of actual against developed budget. In the company described the comparison is on the basis of actual against budget, with footnotes to indicate what is the developed budget where it differs from budget.

In the foregoing an attempt is made to show some of the applications of the learning curve. It is far from the writer to maintain that the statements made and conclusions drawn are true. They are based on limited facts. Other factors not so obvious can change the findings completely. The only thing that can be truly said is that there are indications that the truth has been presented. It is important to note that the use of learning curves has all the limitations of a statistical method.

PERSONALS

C. S. ROWE, R.I.A., formerly Cost Accountant of Preston-Noelting Limited, Stratford, Ontario, has been appointed Controller of the company. Mr. Rowe is a member of the Grand River Chapter.

R. J. LAVALLEE has been appointed General Manager of Walker Metal Products, Windsor, Ontario. Mr. Lavallee was formerly Secretary and Comptroller of the company.

W. J. R. CRADDOCK, R.I.A., has been appointed Travelling Auditor with Canadian General Electric Co. Ltd. He was formerly Supervisor, Costs of the Ward Street Plant of C.G.E., Toronto.

C. H. COMPEAU has been appointed Chief Cost Accountant of Canadian Locomotive Co. Ltd., Kingston, Ontario. Mr. Compeau is a General Member of the Kingston Chapter.

W. J. DENNEE has been appointed Chief Cost Clerk of Canadian Locomotive Co. Ltd. Mr. Dennee, a General Member, is a Director of the Kingston Chapter.

J. J. M. DUBE, R.I.A. has been appointed Cost Accounting Section Supervisor of Canada Iron Foundries, Three Rivers, Quebec. Mr. Dube was formerly with Imperial Tobacco (Ontario) Ltd., Guelph.

J. E. BEAUREGARD is retiring as Supervisor of Banque Canadienne Nationale after 45 years of service with the bank. Mr. Beauregard is a General Member of the Montreal Chapter.

W. E. FALCONER, C.A., presently Controller of Gillette of Canada Limited, Montreal, has been appointed Executive Assistant to the Controller, responsible for staff operations, at the Gillette Safety Razor Company, a Division of the Gillette Company, and will be transferring to Boston, Mass.

MISS MOHAVIS DOUMA, R.I.A., has been appointed Chief Accountant of Con-Force Products Ltd. and Con-Force Construction Ltd., Calgary. Miss Douma was formerly Staff Accountant.

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Cost and Management

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Editorial Comment . . .

S.I.C.A. and The 1960 Asian and Pacific Accounting Conference and Convention

FOR THREE DAYS, commencing March 31, the Asian and Pacific Accounting Conference convened in the Academy of Science Building in Canberra, Australia. Participating in the conference were 76 official delegates representing 29 accounting organizations in 17 countries.

Canada was represented by delegates from the Canadian Institute of Chartered Accountants in the person of J. D. Wilson, First Vice-President, and from the Society of Industrial and Cost Accountants in the persons of D. R. Patton, Chairman of the Co-Ordinating Educational Committee, and J. N. Allan, Executive Vice-President. Following the conference in Canberra, a three-day convention was held in Melbourne which was attended by approximately 1,200 persons.

A full report of the conference and convention will be published at a later date, but a number of general observations are deserving of special comment.

First, there was the meticulous care with which the conference and convention were planned and implemented. The gracious personal attention given to each of the official delegates from the moment of arrival created immediately an atmosphere conducive to the most intimate exchange of views. It is under such circumstances that mutual understanding is more readily achieved, personal contacts have a more lasting effect, and informal discussions frequently become more important and significant than those on the floor of the conference. Apart from other accomplishments, the conference was fully justified by the development of a better mutual understanding of the problems and aspirations of the accounting profession in the various countries, and the establishment of relationships whereby the accomplishments and achievements of each can be shared by all. Certainly this was the hope and the spirit in which the S.I.C.A. delegation went to the conference and, if this organization is able to contribute as much as it has gained, the effort will have been well worthwhile.

The second observation was the almost universal desire that university graduation be made a prerequisite to qualification in the profession. While this is basically a

desirable goal, it is far from attainment in most countries. It is also a goal which has a different meaning in different places. In some countries, it implies that all subjects in which the candidate is to be examined by the professional body would be included in the university curriculum. On graduation, the candidate would then be qualified to sit the final examinations for admission to the profession. In other countries, the implication is that university graduation should form the broad base on which the professional bodies would impart the specialized knowledge deemed necessary by them for qualification in the profession.

Discussion of the foregoing problem during the conference brought out a further question of considerable significance: Is it possible to cover in one curriculum the specialized subjects essential to both public and administrative accounting without extending the length of the course beyond practical time limitations? The Canadian and other delegations took the view that basic accounting instruction was indeed common to both areas of practice but, in the advanced stages, the body of knowledge required was quite different and should therefore be provided in separate courses.

The third observation, and possibly the most important, was the genuine desire on the part of all accounting bodies to advance the professional status of their respective members and, for this purpose, mutual assistance was sought and given. Accountancy is in varying degrees of development in the Asian countries and, while many of their delegates may have looked to the English-speaking countries for some leadership in accounting education, they themselves had much to contribute. The advancements made during a relatively short period reveal an aggressiveness and organizational ability that others might well emulate.

In every respect the conference and convention were a credit to the Australian Society of Accountants and the Australian Institute of Chartered Accountants, the sponsoring organizations. The benefits to the participating bodies, both collectively and individually, may never be fully realized but nevertheless they will be real and lasting.

PERSONALS

E. H. GORTH has been appointed Office Manager of Alliance Paper Mills Limited, Georgetown, Ontario. Mr. Gorth is Chairman of the Niagara Chapter.

T. J. FORD, a General Member of the Niagara Chapter, has been appointed General and Cost Accountant of Plymouth Cordage Co. of Canada Ltd., Welland, Ontario.

J. C. HUTCHESON, R.I.A. has been appointed Cost Accountant of Canadian Office and School Furniture Limited, Preston, Ontario. Mr. Hutcheson was formerly with Oakville Wood Specialties Ltd.

R. G. NELLES, C.G.A., R.I.A., has been appointed Comptroller of H. J. Heinz Company of Canada Ltd. Formerly Assistant Comptroller, Mr. Nelles joined the company in 1946 in the General Accounting Department, Head Office.

G. ERNEST OWEN, R.I.A., of the Vancouver Chapter, has been appointed Controller of his company, Vancouver Iron and Engineering Works Ltd.

OPERATION COSTING AND CONTROL WITH METHODS-TIME MEASUREMENT*

By John M. Hughes,
Industrial Engineering Consultant,
Stevenson & Kellogg, Ltd.,
Toronto, Ontario.

Methods-Time Measurement is gaining recognition as an effective tool of management for control of operation costs. The technique of Methods-Time Measurement can make a powerful contribution to productive labor efficiency and hence to reduced costs. The author illustrates here the MTM technique and notes its costing implications.

OVER the years there has been a continual development, simplification and standardization of management controls. Changing technology and the inescapable pressures of foreign and domestic competition are speeding up this process, drawing attention to the need for correlating all the various managerial techniques—with the primary objective of achieving and protecting profitable operation of the business.

Controls must be designed to achieve this objective of profitable operation as economically as possible. At the same time, they must further what is in most cases a "team effort" involving a wide range of executive functions and business operations.

Costs are obviously one of the main focal points of executive interest in making a business as profitable as possible. Eventually, this question of cost control devolves into the matter of operation costing. This can be seen to be part of an integrated "system" designed to channel vital information as quickly as possible to the centres where major decisions are made.

The purpose here is to set out a practical demonstration of how the proven techniques of *Methods-Time Measurement* can contribute to successful operation costing, and through this, to effective management control.

ELEMENTS OF COST

In the well-established traditions of accounting, production costs fall into three basic categories: (1) materials, (2) labor, and (3) overhead. Material costs for any operation are normally straightforward and need not concern us here, except in a marginal way. For the present, we can take material costs as being controlled through purchasing and inventory control, material lists determined by the nature of the product, controlled batch-mixing—or whatever is called for by the diverse demands of technology. As for overhead costs, they may be allocated on one or more of several possible bases. One of these is the production time or direct labor of the operation to which overhead costs are to be allocated.

*An article based on an address to the Society of Industrial and Cost Accountants, Halifax, 1959.

John M. Hughes is a well-known Industrial Engineering Consultant, having worked with the management consulting firm of Stevenson & Kellogg, Ltd. for the past eight years. Prior to becoming a consultant, Mr. Hughes was engaged in supervisory work in the foundry and engineering industries. He is a member and former Chairman of the Ontario Chapter of the American Foundrymen's Society; he is also a member and former Secretary of the American Institute of Industrial Engineers. Mr. Hughes is connected with the MTM Association for Standards and Research and is a well-known speaker on industrial engineering subjects.

The third major cost element is labor. It is here that the techniques of Methods-Time Measurement can make a powerful contribution to productive efficiency.

METHODS-TIME MEASUREMENT: THE "OPERATION"

Methods-Time Measurement, or "MTM" as it is commonly called by the thousands of men who are working with it, is "a procedure which analyzes any manual operation or method into the basic motions required to perform it and assigns to each motion a predetermined time standard which is determined by the nature of the motion and the conditions under which it is made." (Maynard, Stegemerten & Schwab)

Starting with the primary operation, MTM makes possible the establishment of workable standards for individual and departmental performance. It has helped hundreds of Canadian companies. In many cases it has been the technique that sparked integration of control efforts by the organizational team and its leaders.

To build up the picture of how this desirable chain of events can be brought about, we must begin with the *operation*—which means different things in different companies. Here we will define it as *the task performed by one operator or a team of operators in producing a product.* It will likely be only one of a series of operational tasks required to produce the end item in question. To clarify the point, here are two examples of familiar operations:

The first example is the producing of a shaft having a shoulder and reduced diameter at one end and a keyway at the other. Typical operations might be:

Operation 1. Saw the length.
Operation 2. Turn the reduced diameter.
Operation 3. Cut keyway.

The second example can be the domestic task of cutting the grass. The principles of defining the operations are the same as in the machine shop:

Operation 1. Mow the lawn.
Operation 2. Clip the edges.
Operation 3. Rake up grass.

Even such simple operations as these obviously comprise a variety of motions by the operator.

MOTIONS WITHIN OPERATIONS

As the name implies, Methods-Time Measurement is concerned with *how* manual operations—or machine operations manually controlled—are performed. This requires study of bodily motions, which is included in MTM. To each motion, predetermined standard times are applied, and thence the standard time for the whole operation is built up. Years and years of research have gone into the compilation of these predetermined times, and they have proven to be realistic, practical, durable, and effective for control purposes.

The MTM technique breaks down the physical actions of the body into a few carefully defined motions. *Almost without exception any industrial operation can be analyzed and measured by this technique.* In many years of applying MTM, we have yet to see an operation that could not be analyzed effectively with it, with parallel improvements—where these are called for—in the methods of work involved.

This breakdown of motions can be illustrated by the performance of three simple operations: (1) lighting a cigarette, (2) lifting a light box, (3) lifting a heavy box.

LIGHTING A CIGARETTE

With all due deference to TV commercials, this operation would be described as follows. Using a lighter on a nearby table to light a cigarette which has already been placed between the lips, the operation would be described like this:

Time TMU's	*Symbol*	*Motion Description*
21.5	R24B	Reach 24″ to lighter on table
2.0	G1A	Grasp lighter
13.4	M12B	Move up to light
—	G2	Regrasp while moving up
4.0	R2A	Reach to open cap
.0	G5	Contact grasp
2.9	M1B	Move cap up to open
.0	RL2	Contact release of cap
2.5	R1A	Reach to flint wheel
16.2	AP1	Apply pressure
2.0	MfA	Move wheel
13.4	M12C	Move lighter to end of cigarette
5.6	P1SE	Position flame to end
		PROCESS TIME TO LIGHT*
4.0	R2A	Reach to cap
.0	G5	Contact grasp
2.9	M1A	Move cap closed
20.6	M24B	Move to table
2.0	RL1	Release lighter on table

113.0 TMU *plus** "processing time to light" (measured separately)

The "shorthand" code used to describe the motions is direct and simple to promote ease of application. For example, "R24B" is a reach of 24 inches long to an object, the location of which will vary from time to time. Similarly, "M12B" describes the move of an object (in this instance the lighter) a distance of 12 inches to a point the location of which will vary from time to time. Now, after having lit the lighter, we find further along another move—"M12C". This move, too, happens to be 12 inches long, but the "C" indicates that our move this time is to a precise location—the end of the cigarette. *The code is thus mnemonic to a high degree and serves to define the precise nature of each motion recorded.*

The units of time in the column at the left of the table are "TMU's" or *Time Measurement Units.* Each is 1/100,000 of an hour. The manner of expression of these increments of time was adopted to avoid excessive use of decimal fractions, to get whole numbers which could easily be converted for payroll and costing purposes using hourly wage rates, and for costing per hundred or per thousand units.

You will notice that "process time to light" is ignored in our breakdown of motions and assignment of standard times. You will recall that MTM provides performance times for manual motions only. The lighting of a cigarette, or any other mechanical, chemical, or similar process, is *not* manual and the necessary time for it—that is, its "process" time—must be measured by some means other than MTM. That is usually done with a stop-watch.

Any variation in the tools used in smoking, or the thing being smoked, will of course affect our computation. The *manual time* (to which MTM applies) would be altered if we used a wooden match, a paper book match, or a different type of lighter. The *process time* would be affected if we switched to cigar, pipe, etc.

Now let us look at the common industrial operation of moving a box—under the two conditions of its being (1) light, and then (2) heavy.

This box weighs about two pounds and is to be moved from the table in front of the operator to a chair behind him:

Left Hand Pattern	*Time (TMU's)*	*Right Hand Pattern*	*Motion Description*
	14.4	R14B	Reach to box
	2.0	G1A	Grasp box
(Same as	18.6	TBC1	Turn body
Right Hand)	—	M-B	carrying box
	—	TBC1	Turn body and
	29.0	B	bend and
	—	M-B	carry box
	2.0	RL1	Release
	31.9	AB	Arise from bend and
	—	TBC1	turn body
	18.6	TBC1	Turn body
	116.5 TMU		
	= .001165 hours.		

You will observe some combined motions in this example. In moving the light box, one movement of the foot to turn the body can be combined with bending of the body to place the box on the chair. Then, the act of arising from the bend can be combined with the first step of turning the body back to its starting position.

In our next example, we will change one characteristic—weight.

This operation, as common sense suggests, is likely to take a little longer than moving the light box. Now we shall see *precisely how much longer:*

Left Hand Pattern	*Time (TMU's)*	*Right Hand Pattern*	*Motion Description*
	30.0	W2P	Walk 2 paces forward
	—	R-B	and reach to box
(Same as	2.0	G1A	Grasp box
Right Hand)	22.9	M2B50/2	Lift box from table
	74.4	TBC2 x 2	Turn around and
	—	M-B50/2	carry box
	29.0	B	Bend and
	—	M-B50/2	lower box
	2.0	RL1	Release box
	31.9	AB	Arise and
	—	TBC1	turn around
	18.6	TBC1	Complete turn
	210.8 TMU		
	= .002108 hours.		

From the example of the heavy box, you can see that it is necessary to turn around with the box, using more motions of the feet, before the (distinctly separate) bend. Then, the box has to be carefully released. As a result, the time is 81% greater than the time for moving the light box. Try it, if you like, and see the logic in action for yourself.

The noteworthy feature of this exercise is the actual construction of a table of time values for an operation. You can see that by studying the motion patterns and correlating them to the physical characteristic of weight, we can draw up tables of values which will provide *accurate and consistent production times for the moving of any box.*

ABOUT THE EXAMPLES

Our little illustrations of the cigarette and the boxes are elementary indicators of how thousands of different types of operation have been studied in industry to produce standard data from which calculations can be made quickly to formulate the production time actually needed for a particular operation.

Although the basic method is easily transportable by industrial engineers trained in MTM, experience has demonstrated that the standard time data, in "operation form", are not so portable. Each organization has to develop its own yardsticks, not borrow them from others. Conditions invariably differ from one plant to another. The operation may look the same, but sequence of work, machinery, layout, materials, quality requirements and other factors of importance will be different, necessitating fresh study.

More than a thousand people now apply the techniques of Methods-Time Measurement in Canada. Stevenson & Kellogg has trained more than six hundred. In fact we will be starting on our second hundred training programs and our tenth year of the training and working-training program in 1960. Many thousands more people are practising MTM in the United States and throughout the world. They have all proved for themselves the soundness and consistency of many tens of thousands of operation standards they have calculated.

Through analysis of motions and development of standard data, the first requirement of sound operation costing can be established—the production time per unit for each operation.

The production time system, operation by operation, is clearly an integral part of the larger question of plant management. We have now to consider the contribution of MTM to this larger question.

OVERHEAD ALLOCATION

Many considerations and points of view surround the matter of incorporating overhead expenses and depreciation into costing rates. Since overhead allocation and direct labor usage are so intimately associated, I cannot disregard the matter even though the field is out of my realm. You will forgive me, if I make some comments on practices in overhead costing that tend to mislead management and dilute the effectiveness of executive control.

The distribution of overhead to an operation, a machine group, or a cost centre is most frequently made on the basis of production time or direct labor dollars. In this case the accuracy and adequacy of operation times in detail (and in aggregate)

become a foundation on which are built both labor costs and appropriate overhead allocations. One of the purposes of this presentation is to establish the proposition that MTM is an excellent technique for obtaining accurate and useful labor costing of manual operations.

The identification and separation of items of expense that are to be apportioned to the labor in various groups of operations or cost centres is a distinct problem in itself. I intend to touch on a few examples in passing so that this aspect of costing and pricing will not go unnoticed.

Overall application of an average overhead to all operations in a manufacturing plant can be decidedly wrong. Let me give you an illustration. In a plastics-moulding or sheet-metal-press department, equipment can cost from $1,000 to $100,000 per machine. These should be broken down into machine groups in order to apportion cost of space and depreciation values to the production time or direct labor needed to produce one unit. Very simply, on a straight-line 10-year (or 10%) depreciation, the $1,000 machine is costing about 50 cents per day and the $100,000 machine is costing approximately $50 per day. These costs must be paid for by the work which is produced on these machines. Use of an average cost of, say, $25 per day per machine will keep the expensive machine busy dragging you into bankruptcy while your unrealistically high charges against the smaller machine work will prevent its products from being priced competitively.

The effects of different kinds of toolage are perhaps more obvious. Expensive, multi-stage dies are more costly items than stock punches and dies; the use of one or the other type on the same machine requires different rates—unless toolage costs are considered separately, as they often are in jobbing operations.

The effect of type of work on overhead costs is less obvious. Let us change our illustration and think about the core department of a foundry. In this foundry there are small bench-cores and large floor-cores. The floor-cores are heavy and require expensive processing and moving equipment.

In establishing a departmental overhead, the seemingly inexpensive materials of sand, the miscellaneous small pieces of equipment, and the more expensive ovens and hoists have been grouped together to develop one overhead figure. What is wrong? The small bench work should never have been burdened with the overhead requirements of the large equipment, or of hoists, needed for heavy floor-cores. Furthermore, the material used in making the cores should have been costed as a material, not as an overhead item.

Policies within your cost and accounting department should specify where such breaks must be made. Let us say to ourselves something like this: "If a material accounts for more than one per cent of the product cost then it must be treated *as* a material for costing. If less than this figure, it will be regarded as an item of overhead expense." Perhaps your limit should be two per cent, but following some such rule will again avoid the road to loss on one type of work while you price yourself out of the market on another.

Averaging of overheads is dangerous to company sales and profits. Always give thoughtful consideration to cost centres to be sure that overhead allocations fairly reflect operating facts. Isolation of accountants dealing with such problems does not pay. Cost centres should not, in my opinion, be set up by the cost and accounting

group alone. They should be established in conjunction with the whole operating team to ensure that they are realistic.

CONTROL: GENERAL

We have now dwelt at some length on the processes by which standard times can be derived for operations. We have taken material costs as given. We have stated rather baldly some injunctions about overhead costing being related realistically to the operational patterns studied for standardization.

One of the most important—if not *the* most important—cost elements in a manual or manually controlled operation is the cost of labor. For control purposes it is a central issue. Let us return, therefore, to MTM and its relation to broad areas of cost control, insofar as these grow primarily out of the control of the costs of labor.

At this point I would like to suggest a more graphic term—*cost of time*—to replace the notion of "labor cost." I have a good reason for this. Time has a constant value which can be used in many necessary management controls. Time will not change, as wage rates do, under successive collective agreements. And time is easily convertible into cost through the application of current wage rates.

The critical aspect of accurate operation costing is the accurate determination of the operation times per unit of output. Past records tell us the number of units produced in a given time in the past, but they will *not* tell us the number of units that *should* have been produced in that time. This can, however, be done if we use a work measurement technique such as Methods-Time Measurement.

The control function can thus be reduced, in the final analysis, to a process of integrating cost data. Through integrated records and data-processing, through a clean flow of organized clerical duties, cost control data can be boiled down to "action figures" for the organization team.

CONTROL: GETTING THE MOST OUT OF MTM

The first step is to set up an *operation master sheet*. On the operation master sheet are recorded the basic items of job information which are a standard requirement for production: materials, operation time, and the cost centres where each operation is performed (which will sometimes depend on the size of the order).

These master sheets are frequently important enough to warrant a separate filing system, since they form the nerve centre of our ultimate operational control. Too often, individuals try to keep personalized file records which are, for any one individual, necessarily incomplete. It is far better to devise a master filing procedure and have the operating team participate in its development and then stick to it.

The operation master sheet in its most flexible form covers just one part. This is required for industry where complicated, highly variable assemblies are produced: examples are radios, stoves, refrigerators, and automobiles. However, where the product is composed of a relatively few parts, or has relatively few operations per assembly, the master can sometimes be designed to cover the complete product or assembly: examples are needlework, foundry operations, and certain specialized types of printing.

From the operation master sheet we can extend the data at any time into current costs through a *cost sheet* designed to complement our master sheet—with wage rates, overhead rates, and material costs. These variable factors are regularly reviewed to meet changing conditions.

We pointed out earlier that control demands the measurement of a condition and quick action in response to it. Control of the "cost of time" is readily obtained by taking the recorded production and multiplying by the standard time per operation. In other words, this is how much time *should* have been spent. Was too much time spent? To find out, we start with the clock time actually used up during the day, adjusted downward for authorized "down time" of operators. Operation by operation, or department by department, we can compare the standard time with corrected actual time to see whether we measured up. Performance can be expressed as a percentage of the standard time: we divide the standard time—the "earned production hours"—by the actual production time that elapsed on the job. These simple computations, which are always necessary for pay on incentive operations, also provide supervisors with percentage performance figures which are unsurpassed as a quick control index. Furthermore, the production figures can be integrated as a progress posting for production control.

Summarizing the results of such daily work sheets for the pay period provides the record of clock-plus-incentive hours for the paymaster. Summarizing the results of all employees in the department and comparing the production hours paid with the production hours really "earned" (according to the standard aimed at) provides a departmental performance percentage which is a measure of supervisory efficiency.

The impact of such a control procedure is excellent. If we estimate costs at standard and performance is over 100%, we have black figures. If performance is less than 100%, we have red figures. We know which within hours. Corrective action can be taken immediately.

However, we must keep in mind the possibility that some departments may never reach 100% performance. In fact, our system may be at fault. Operators may be doing their own set-ups; this may be chargeable as direct labor (not overhead), yet in estimating only production time we have not allowed for this. Set-up time is lost. This is one reason why, occasionally, the mark-up used by the sales department and the commensurate profit for that mark-up is not realized. So be sure your costing reflects operating conditions. Only by cooperative analysis with the other divisions can some of these confusions be cleared away.

UNWANTED TIME LAGS

The element of *control,* which is central to the full application of MTM techniques, involves the measurement of operational and cost conditions and the taking of quick action to maintain continuing control of true costs—in short to keep costs to a minimum at all times. I have outlined briefly how the control system on labor—and its connection with allocation of overhead—can be built up with the help of Methods-Time Measurement.

In all such control systems, time lags in the flow of control data are crucial determinants of the effectiveness of executive action. Perhaps I can illustrate this point from an experience where teamwork was combined with faster decision-making techniques to produce outstanding results. In this case, the company's normal monthly budget forecast (in a jobbing operation) was compared with actual reports supplied anywhere up to six weeks after the end of each month budgeted for. The mistake here was to believe that manufacturing personnel could recall details of a continually changing scene so far back in time. When this was appreciated, an effort was made

to prepare a *daily* operating statement for manufacturing that permitted the operating team to have, within a day (and hence within easy recall), the story of their effectiveness. This, however, seemed to be a large task, too demanding for everyone. With MTM techniques, the good reporting of labor hours, material requirements and apportioned overheads, this statement was ultimately produced with less than half an hour per day of office clerical time. Teamwork here provided a simple means of fast, accurate reporting and tabulating which enabled prompt appraisal and action by the manufacturing group. Today this operation is under tight control.

THE CENTRAL FILE AND STANDARDS SYSTEM: RESULTS

I would like now to summarize the broader implications of MTM for executive control, and to incorporate in this summary the reasons for believing that operational controls should be built up on a central file of operation master sheets.

Two primary points deserve full recognition at the beginning. First, an integrated control system cannot be developed if key information is scattered loosely through an organization in private filing systems. Second, with centralized handling of operation master sheets opened for MTM analysis, the larger control picture can be brought into sharp focus:

1. To determine the performance of individual operators.
2. To calculate pay.
3. To assess the performance of whole departments.
4. To determine the labor cost per unit, when multiplied by the hourly job rate of pay.
5. To decide on the allocation of overhead costs to a specific job or cost centre.
6. To facilitate the scheduling of current work by production control personnel throughout the plant.
7. To set up future schedules of production, with known requirements of materials and equipment as well as labor; this obviously has a bearing on future investments in machines, preventing premature expenditure of capital funds.
8. To supplement mere drawings when engineering personnel are required to redesign a part or remedy a problem. This may seem a small point, days of investigation have been saved here through the use of informative operation master sheets begun with MTM programs.
9. To speed up creation of requisitions for materials. Purchasing people can check to be sure of material specifications and other references peculiar to the job in question —because these are available in the central file of operation master sheets supplemented with material requirements.

We have dwelt at length on the need for a systematic approach to cost control, but we must not forget that systems are only as good as the men who devise them and make them work.

For further reading

THE THEORY AND PRACTICE OF PREDETERMINED MOTION TIME SYSTEMS, by G. B. Bailey, *Advanced Management*, May 1959.

COST REDUCTION THROUGH COST ANALYSIS AND METHODS IMPROVEMENT, by T. L. Carroll, *Cost and Management*, Apr. 1959.

The Economic SCENE . . .

by W. Allan Beckett

PROGRESS AND POLICY

"WE MUST in the end learn as a nation to live within our means and exhibit the strength and the will to do so. It would in my view be the path of realism to move firmly in that direction on a broad front without delay."

In this emphatic, if rather general, assertion, the Governor of the Bank of Canada points to the need for policies to correct the problems that plague the Canadian economy—in particular our trade imbalance, our growing foreign indebtedness, and the growing foreign ownership of Canadian industry. "We can achieve", Mr. Coyne says, "by our own efforts without foreign aid, a substantial increase every year in our productive capacity and standard of living." But what specific policies are to make up the 'broad front' and what sort of progress can we achieve by the new policies?

First there are general measures, such as fiscal and monetary policy. Fiscal policy—government surpluses in boom times and deficits in recessionary times—can help to even out some of the swings of the business cycle. But fiscal policy may, over the longer run, contribute to excessive overall spending and "to an increase in production and employment outside Canada". On the other hand, a tight fiscal policy—and this is implicitly, not specifically, recommended by the Bank of Canada—could reduce domestic spending and lessen our dependence on foreign capital and foreign imports. A consequence of a tight fiscal policy would be a slower rate of growth, less inflation and more unemployment.

Monetary policy operates by restricting the money supply and excessive spending in boom times and by easing the money supply and permitting credit and spending to expand during recession. Monetary policy can also help in evening out the business cycle. Over the longer run an easy money policy contributes to inflation and foreign borrowing, a tight policy to deflation and unemployment. Once again, the Bank appears to favor, at this time, a restrictive policy to restrain excessive spending, foreign imports and rapid growth. The consequences will be to dampen domestic demand and raise unemployment.

The Bank recognizes, and rightly so, that fiscal and monetary policies are too general, too blunt, that they operate in a given direction. The ultimate results, in terms of growth and stability without undue inflation or unemployment, depend on many other factors in the Canadian economy and abroad. For this reason additional and more specific policies are needed.

Again in Mr. Coyne's words—"there are no doubt various special measures whether financial or other, which governments can take to reduce the various disabilities of small business and *to mitigate the handicaps of Canadian enterprises in competing against foreign enterprises which operate through subsidiaries in Canada or send their goods into Canada.*" And later—"we would benefit more from greater diversification of our production—from more emphasis on a balanced industrial structure."

Whatever else is implied in these 'special measures', it is clear that the call is for greater protection for Canadian secondary industry, for measures designed to shift labor and other resources from high productivity to low productivity industries. While such measures may serve to lessen Canadian dependence on foreign imports and to reduce our borrowing from abroad, they can only be successful at the expense of lowering Canadian productivity and living standards. Higher tariffs or direct import quotas are a short run, not a long run, solution to the problem of a trade imbalance. Even as a short run solution, such policies bring in their train misuse of resources and create the need for other corrective action.

A more logical long run solution, it seems to me, is to maintain the vigour and competitive ability of Canadian enterprise through private as well as public policy. Public policy can contribute by 'regulating credit and currency in the best interests of the economic life of the nation and by mitigating fluctuations in the level of production, trade prices and employment.

Under conditions of high levels of production and income, it is up to business, unions and individuals to pursue policies that will increase the productivity of the Canadian economy, that will make it more competitive at home and abroad. It is up to Canadian business and Canadian investors to assume more of the risks and responsibilities that are inherent in their role in the community and not leave it to foreign investors to fill the gap. It is encumbent on Canadian business to avoid at all costs hiding their inefficiency behind the facade of a tariff wall. Let us diversify and balance our industrial structure by all means, but let us do it by showing our inventiveness and ability. Let us assume a greater share of the ownership of our resources and our industry, but let us do it by shouldering the same risks as foreign investors are prepared to assume. And let us not forget that if we wish to do without foreign capital, if we wish to remain free from foreign ownership, we shall have to rely on our own efforts. We may have to be content with a slower rate of growth, a slower rise in our living standards and probably more unemployment. It may or may not be worth the price. It is for each to decide for himself.

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BUDGETARY PLANNING AND CONTROL OF MARKETING

By Alwyn M. Hartogensis,
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The sales forecast and the marketing program are inseparably related. Therefore, a sound knowledge of marketing problems and conditions is indispensable to the accountant for better pricing and forecasting. This article outlines some of the factors that affect sales and the steps that should be taken to bring about effective budgetary planning and control.

THE industrial accountant, particularly the cost accountant, is usually well versed in manufacturing processes and procedures. This knowledge is essential to intelligent participation in the planning of manufacturing operations and in the control of manufacturing costs.

Perhaps one reason why planning and control of the marketing function is not as well developed as in manufacturing is the accountant's lack of familiarity, and often of interest, in this field. Those accountants who are concerned with budgets and forecasts will find that a study of marketing problems will well repay their efforts in more effective budgets.

Lack of interest, however, is not the only reason why planning and control have been farther developed in manufacturing than in marketing. The latter is more difficult to control. For this reason, it presents a greater challenge.

There are three internal factors, that is, factors under control of management, which determine the volume of sales to be expected. These three factors are quality level, sales price, and effectiveness and extent of marketing efforts. In addition to these internal factors, there are several external factors, such as prevailing economic conditions and competition, over which control by an individual company in competitive industry is limited.

Quality level, as a controllable factor in sales, may be eliminated from this discussion with a few words, because action in the area of quality precedes the marketing function. Quality often determines the *sub-market* within which the seller operates, since there often are distinct and separate markets for different standards of quality. The market for any specific quality level may or may not be of substantial size. The size of the respective markets tends to taper off at extremes of high and low quality. Control by the seller, in this respect, lies in producing a quality level for which there is a satisfactory market and in directing his marketing efforts to reach the appropriate quality segment of the market.

Other factors being unchanged, a lower price will result in more sales (in units) than a higher price. In the case of most commodities and services this results not necessarily at the expense of competitors' sales volume; they presumably will meet

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the price, but by attracting more buyers into the total market. Also, other factors, including price, being unchanged, a more vigorous and extensive marketing program will result in more sales than a feeble or restricted effort. For these reasons, planning of sales and marketing should coordinate these two controllable factors.

MARKET RESEARCH

If the writer is permitted the liberty of extending the use of the term "market research" to include subjective opinions and hunches as well as the most carefully and scientifically planned examination of all available sources of information bearing on an existing market, it can be said that sales prices, sales forecasts, and the marketing program are derived from market research. If any reader believes that sales prices derived by a mark-up cost are an exception to this statement, let him explain how the amount of mark-up was determined. And in the case of sales price derived by direct bargaining with a customer, reception and consideration of the customer's views are involved, which is a limited form of market research.

It follows that a sound and adequate survey of the market is a requisite of sound pricing, forecasting, and marketing. It seems reckless to ignore the tools available, imperfect as they are.

A very important area of market research is product evaluation. *You* are aware of the virtues of your products. But it is difficult for you to evaluate them from the point of view of the customer. For this reason, it is often more effective to use the services of an outside organization than to use your own staff. The questions to be answered, from the prospective customers' viewpoint, include:

1. To what extent will this particular product increase my earning power, or what return will it earn on my investment in it (sales price)?
2. What satisfaction will its use or possession give me? How much is it worth to me? Would I rather have this product than anything else I could buy for the same amount of money?
3. How does it compare in quality and utility with those available from competitors? How does the difference in price, if any, compare with the value to me of the difference in quality and utility?

The conclusions from a product evaluation survey of this kind are useful both in establishing a sound sales price and in actual selling. They provide facts which can be used as an effective sales scheme. Moreover, they often will show how the saleability of a product can be improved.

SALES PRICING

There exists an extensive body of economic theory with respect to the pricing of commodities and services and to the determination of the optimum or most profitable price, for example, that the most profitable price (in the short run) is that which marginal revenues and marginal costs are equal. It is seldom practicable to apply these theories directly in establishing sales prices. On the other hand, almost each pricing situation requires a different approach, and the soundest practice seems to be to find a way to measure the value of the product to the potential customer as the basis of price, including comparison with competitive products and evaluation of differences.[1]

[1]) See "The Art and Practice of Pricing" by the author, N.A.A. Bulletin, Vol. XXXIX, No. 7, page 63, March 1958. National Association of Accountants, New York.

In a sense, management of the selling company does not control sales price. It sets a sale price, but sales are consummated only when a purchaser is found to whom that price is acceptable. Only when the commodity or service is or appears to be indispensable to the prospective purchaser and when there is no satisfactory substitute available can the seller "control" sales price.

A market survey or research project conducted for the purpose of forecasting future sales must be based on one or more prospective sales prices. It is incomplete to forecast the probable sale of 6,000 vacuum cleaners next September without reference to price. Fewer will be sold at a higher price than at a lower price. If sales price is not specified, some price such as existing price structure, must be implied.

The market survey will be more useful if it is made for two or three prices. It might determine that the following quantities of vacuum cleaners probably can be sold at the prices shown:

UNIT PRICE	QUANTITY	TOTAL SALES
@ $40	8,500	$340,000
50	6,000	300,000
60	4,000	240,000

With a knowledge of manufacturing and selling costs, it is not difficult to calculate the price which will be most profitable to the seller. Because certain costs, such as executive and supervisory salaries, depreciation, interest, and insurance do not vary in proportion to volume produced but remain almost fixed within limits of existing capacity, average unit costs are lower as volume increases. A study of these costs might show the following:

SALES PRICE	QUANTITY SALABLE	TOTAL SALES	COST UNIT	COST TOTAL	PROFIT
$40	8,500	$340,000	$32	$272,000	$68,000
50	6,000	300,000	35	210,000	90,000
60	4,000	240,000	39	156,000	84,000

The two elements which determine the most profitable price are the extent to which the market reacts to a higher or lower price and the extent to which unit costs change with a change in volume, the change in unit cost being greater when a larger portion of all costs are fixed or semi-fixed.

THE MARKETING PROGRAM

Depending on the nature of the products, their ultimate uses and users and the channels of distribution, the marketing program encompasses many activities other than sales solicitation through advertising and salesmen. It may include application engineering and laboratory research into customers' utilization problems, assistance to distributors and dealers in business management and retail sales training, assistance in proper maintenance and display of dealers' stocks, or any other activity necessary or helpful in keeping the brand or maker's name in the consumer's mind, helping the dealer to sell, or helping the consumer to obtain greater satisfaction in use of the products.

Obviously the activities within the marketing program involve expense to the company. The return expected from the expenditure is profitable sales. Therefore,

the cost of the program must be considered in connection with its prospective effect on immediate and future sales. Since neither the expenditure of a marketing dollar nor a particular marketing activity, such as an advertisement or a personal sales call, can be related directly to additional sales volume, evaluation of a sales program is a matter of experienced judgment with some trial and error and some element of chance, such as in the case of an advertising theme which catches the public's fancy. The general scope of the marketing program often is dictated by the marketing practices of competitors, that is, by industry custom.

Notwithstanding the lack of clear criteria of the effectiveness of individual elements of the marketing program or of the extent to which each of those elements can be employed with profit, a sound, systematic approach to an effective marketing program is possible. It would involve consideration of the following (not necessarily to the exclusion of other) factors:

1. Size and location of market for each specific product with respect to its quality and price.
2. Effect of external conditions, such as economic conditions and direct and indirect competition, on the market, on the desired share of the market, and on promotional and selling effort required.
3. Kind of promotional and selling effort required.
4. Potential profit margins of the various products, with sales emphasis on the more profitable lines.
5. How much effort is required.
6. Where and how effort can be applied most effectively.
7. How to present to prospective customers most effectively the value of the product: (1) As a desirable and useful product; (2) As distinct from (and superior to) other useful products.
8. The cost of each activity in the marketing program and of the total program.
9. How to reduce the cost of the program or any part of it without decreasing its effectiveness and its results.
10. The sales results which may be expected in terms of quantities sold, dollar sales volume, and gross profit.

Consideration of the foregoing ten points will help in formulating an effective and profitable marketing program.

THE SALES FORECAST

The sales forecast and the marketing program are twins, born of the same estimate of prospective market conditions and potentials. Both are limited by external conditions. Forecasted sales volume will be dependent, in part, on the intended direction, extent, and effectiveness of the marketing program. On the other hand, the marketing program should be designed to exploit the potentials of the market revealed by market research and which form the basis for the sales forecast.

Obviously there is need for close coordination of the sales forecast and the marketing program. Additional marketing efforts usually will increase sales, but the amount of additional sales per dollar spent for marketing diminishes until there is no return for the marginal expenditure. Since some products offer wider profit margins than others and some territories can be developed more successfully and at lower cost than

others, the marketing program should be designed to achieve the sales objectives and the sales forecast should be consistent with the intended marketing effort. There is the problem of balancing sales objectives and marketing efforts to maximize profit. This seems to be a fertile area for experimentation with the methods of Operations Research.

CONTROLLING THE MARKETING PROGRAM

The pre-planned marketing program, together with the expected cost of each of its elements, constitutes a marketing expense budget. In order to serve as a means of control of the marketing program, the budget should be expressed in terms of what, how, when, and where marketing efforts—promotional, direct selling, and sales supporting—will be made. Each of the programmed activities and functions should be costed. However, mere spending does not produce sales, and the expression of the intended manner of spending—the what, how, when, and where—is essential to direct the spending into the planned channels.

The budget, detailed and costed as described, permits advance consideration of its wisdom with respect to both the expected results and the resources of the company available for that purpose. It also permits consideration of the conformance of plans with general policies and long-range objectives. This advance consideration is the first point of control and is essential if any real control is to be exercised effectively.

The marketing expense budget continues to serve as a measure of control and evaluation of marketing operations during the budget period. For this purpose, periodic comparisons of actual expenses with the budget, in full detail of location, activity, and kind of expense, indicate

—the extent to which the authorized marketing program is being followed, and

—the extent to which the cost of each portion of the program is being kept within the authorized and anticipated limit.

It is fully as important for purposes of management that the budget reports indicate conformance with the marketing plan as it is that they indicate conformance with planned cost.

Marketing cannot be carried on in a strait jacket. During the budget period, conditions may change and assumptions on which the marketing program was based may turn out to have been erroneous. More importantly, new opportunities appear and it is necessary that they be exploited without delay. The budget must and can be kept flexible.

A desired change of any consequence in the original marketing program will involve an addition, reduction, or substitution in the original budget. Such proposed changes should be submitted for approval in writing, with appropriate explanation of their nature, their cost, their advantages or other justification, and their effect on the total marketing program. Forms for this purpose which may form a part of the standard budget procedure have the advantage of insuring the presentation of complete information necessary to permit adequate consideration and approval of the proposed change. If approved, the result may readily be incorporated into the revised budget. A sound revision procedure is essential to an effective budget system and to effective control.

MEASURING SALES RESULTS

The sales forecast is a formal statement of the results expected from the marketing program. It should be compiled in terms of product classes and to the extent applicable, by districts or location, by sales channels, by classes of customer, and other pertinent categories which will facilitate analysis and evaluation.

Periodic comparisons of actual results with forecast indicate the degree of success of the marketing program. The variances from forecast can be analyzed to determine the degree of effectiveness with which the marketing program is being conducted. The timely discovery of weakness in the execution of the program affords an opportunity to improve the program or to improve its execution, as appropriate.

Analysis of variances of actual results from the forecast will indicate the probable trend and eventual results which may be expected due to changes in economic conditions, effectiveness of competition, and other external influences. This should provide a chance to take advantage of favorable situations and to take timely action to minimize the adverse effects of unfavorable situations.

Like the marketing budget, the sales forecast may be revised as conditions warrant. Revision is not necessary merely because actual results differ from forecasted results. Such variances may be projected as recurring or non-recurring to measure the probable effect on future periods and the total sales forecast for the entire budget period. But if items are withdrawn from the sales line, new items are introduced, or other substantial changes in sales policy are made, it may be better to revise the forecast, or to prepare an entirely new one, rather than to attempt to measure and project variances from the original forecast. Trends which have changed for any reasons are no longer useful.

For further reading

CONTROLLING MARKETING COSTS, by Ernest Maheux, *Cost and Management*, Jan. 1959.

CONTROL OF MARKETING COSTS, by Arthur P. Felton, *Cost and Management*, Nov. 1955.

MARKETING COST CONTROL, by Paul Jeffrey, *Cost and Management*, Sept. 1955.

COST CONTROL FOR MARKETING OPERATIONS—GENERAL CONSIDERATIONS, *N.A.C.A. Bulletin*, Apr. 1954, Sect. III.

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The Editor's Choice

INTEGRATING PROFIT CONTROL AND FINANCIAL PLANNING
H. M. Daniels, The Controller, March 1960

In this article, budgets and financial statements are prepared in terms of responsibility. Budgets are broken down under the management head who is responsible for incurring the transactions. When the operating statements and balance sheet are made up, deviations in the period results are explained in terms of the responsible head. The author gives an illustrative budget and explains the variations in terms of the actions of the people who prepared the budgets and allowed the deviations from the plan.

SPECIAL REPORTS ON MAJOR BUSINESS PROBLEMS
Business Week

This booklet contains reprints of special studies that have appeared in *Business Week*. The reports are: Picture of Growth, Japanese Business Men, The Startling Impact of Private Pension Funds, Computers, The Real Trouble with U.S. Education, Designers: Men Who Sell Change, How the U.S. Stands on Guided Missiles, Labor Violence and Corruption, Selling to the Age of Plenty, The Long Reach of TV, The New World of Research, and Business Forecasting. Some good reporting and a lot of thought-provoking and interesting data are brought together in this section of reprints.

MANAGEMENT MUST BE MADE ACCOUNTABLE
E. Dale, Harvard Business Review, March-April 1960

Now that the privately-owned business is disappearing in favor of public ownership under the direction of paid management, a question of responsibility arises. This separation of the owners who risk the capital and the professions who employ it on their behalf gives management wide powers with few restrictions. When ownership is so widely dispersed, there are few stockholders with the exception of institutions that would be powerful enough to question irresponsible managers. This lack of responsibility could well lead to incompetent inbreeding. Unless the large holders of stock or management itself will call for accountability, government bodies may be the ultimate examiners of management's proficiency.

By E. A. Ravenscroft, Harvard Business Review, March-April 1960

PRACTICAL APPLICATIONS OF COST-VOLUME-PROFIT ANALYSIS
J. D. Willson, N.A.A. Bulletin, March 1960

This article is well illustrated with uses that can be made of the cost-volume-profit relation both in the area of planning and control of business operations.

FIGHT CANCER
with a Check-up and a Cheque

Books in Review . . .

MEN WHO MANAGE

By Melville Dalton, John Wiley & Sons, Inc., New York, N.Y. 1959. pp. 285.
Reviewed by J. W. Fitzpatrick, B. Com., C.A., R.I.A.

Books on the general subject of management functions, executive responsibilities and corporate organization are notoriously "heavy" reading because of the abstract ideas, subtle relationships and varying shades of psychological action and reaction which must be explored and developed. However, in *Men Who Manage,* Professor Dalton has succeeded in dealing with his subject thoroughly, logically and extensively without venturing too often into academic realms of intangibles where few can follow.

The author opens with the statement that " . . . the aim is to get as close as possible to the world of managers and to interpret this world and its problems from the inside . . . " This is then accomplished by drawing on a wealth of personal information and experiences gathered at three large industrial plants and a department store with which the author had close contacts. The official organization chart of one of these is shown and discussed, and then the *unofficial* organization chart (quite different) is introduced and explored. This leads logically into detailed examinations of the characteristics and actions of each of the principal executives and the features which result in his place on this chart. It is at this point that the author dives beneath the surface of official organization and proceeds to "swim underwater" throughout the balance of the book. This unique unofficial approach to the subject, with the text being liberally interspersed with case studies and verbatim quotations from the subjects themselves, lends a fresh outlook to the book and maintains reader interest through some of the heavier going.

Having explored the struggles for power between line executives in various segments of the organization, the author then proceeds into the inevitable area of staff and line relationships, and examines the conflicts resulting from the basic differences of age, education, professional consciousness and social status between the members of these groups. These differences are carefully discussed and analyzed, and illustrated by quotations from the subjects being studied.

A chapter is then devoted to a study of union-management relationships arising out of the necessity for each to live with the other on a day-to-day basis within the limits of the labor agreement. This is followed by a very interesting chapter searching for the characteristics of managers which lead to promotion, such as age, work background, service, and formal education. Although no positive conclusions are drawn, the flexibility of character resulting from college education and its extra-curricular activities is brought to the fore as one of the more significant attributes associated with promotion. A further chapter explores the many means of unofficial reward available to satisfy requirements where the official salary alone cannot.

The book closes with some chapters on informal operations that are carried on beneath the surface of formal behaviour, and the manoeuvres by which the successful executive is able to deal with problems of ambiguity, conflict and confusion.

Study of this book should prove rewarding to the executive or would-be executive who seeks better understanding of the nebulous forces with which he is dealing in order to turn these to his own advantage in promoting his career.

TOPICAL comments

LOOKING AHEAD

Air conditioner sales, backed by one of the manufacturers' biggest merchandising programs, are expected to rise by 10 to 30% this summer. Off-season demand is at a record high, with value of factory shipments of window-type models up 950% in the first two months of this year over the same period last year. New models are quieter, lighter, and less bulky but may cost up to 10% higher, since last summer's heat wave cleaned out all inventories. *(Fin. Post, Apr. 30/60)*

Seven dollars per week may rent a fibreglass swimming pool for your backyard this summer. An Ontario manufacturer plans to install excavated swimming pools on a rental basis this year or next. However, the customer would have to contract for at least a year's rental. The rental plan has several advantages: no down payment is necessary; the pool is not subject to property tax; and maintenance is looked after by the manufacturer. *(Fin. Post, Apr. 30/60)*

Optional fluoridation of drinking water may be available to homeowners in the future A device that adds the proper amount of fluoride to tap water for the preservation of teeth is now being tested in the U.S. and, if successful, may be leased to homeowners for under $3.00 per month. *(Bus. Week, Apr. 9/60)*

Prefabricated roads are being built in Germany, a technique that shortens construction time by four or five weeks. The road elements are assembled in factories in the form of concrete blocks, eight inches thick, set on gravel pads, and topped with asphalt. *(Fin. Post, May 7/60)*

The economy car of the future will float on a cushion of air across any surface including water. Travelling at speeds as high as 60 miles an hour, the vehicle will be lifted six to eight inches above the ground by downward air blasts and will be steered by deflection of the air to right or left. The air-car is now being produced commercially in the U.S. and Britain. *(Can. Bus., April/60)*

ON THE PERSONAL SIDE

The length of your cigarette butt reveals your social status. Results of a recent study on the relationship between smoking and cancer turned up this interesting sidelight: average length of an upper class butt was 31.4 mm.; of a middle class butt, 27.8 mm.; of a lower class butt, 25.5 mm. *(Fin. Post, Apr. 2/60)*

Modern prestige buildings are no particular drawing card for secretarial staff. In a survey of 800 secretaries, less than one-fourth said they would put a prestige building ahead of pay, but most said they would sacrifice higher pay to work in a building that is easily accessible to transportation. *(Bus. Week, Apr. 16/60)*

The group approach to business planning is gaining in popularity today and to those who are concerned with making the meeting a success, a Harvard University professor offers the following advice:

- If you are the leader, act like any other member of the group. Impose no unnecessary rules, and let others know that you can be argued with.
- Recognize that in any unorganized group, two leaders—a "task" and a "social" leader—arise. The task leader is usually the idea man, who may sometimes rile the other members of the group. Balancing him is the social leader, who smoothes ruffled feelings and promotes harmony.
- If the appointed leader is the wrong man, try to show him what's happening and point out the rising task and social leaders.
- If you are an appointed or natural leader, be sure you know which type you are—task or social, then watch for your partner and make an ally of him. *(Can. Bus., Apr. /60)*

OF GENERAL INTEREST

Car plants have found that capital expenditure on completely automated production lines does not pay off. Canadian manufacturers have found that:

1. This expensive equipment is idle half the time
2. A small change in production may cause a complete change in a whole line.

The trend is now toward modern and efficient single machines connected by operator-controlled conveyer systems which are less expensive to install and maintain, are more flexible, and have sufficient capacity to handle all foreseeable production needs. *(Fin. Post, Apr. 30/60)*

Office workers never had it so good, a recent NOMA survey of the office customs of 2,300 North American companies reveals. The survey shows that:

- 75% of companies permit unrestricted smoking in the office
- 80% grant coffee breaks and/or rest periods
- 89% have no rules or restrictions on office dress
- 86% hire married women with pre-school children
- 58% have no employment restrictions against hiring relatives of present employees
- 73% permit incoming personal telephone calls while 66% permit outgoing calls
- 87% of employees are permitted to receive personal mail in the office
- 65% of companies hold Christmas parties for employees and 40% hold summer picnics.

Companies are cracking down these days on the absentee employee. A survey of 200 personnel executives representing a cross-section of American business shows an active reward and punishment system in effect.

Measures taken to reward good attendance ranged from an extra week's pay or vacation for a year's perfect attendance to cash or product bonuses and personal congratulations from the president.

Deterrents to absenteeism included a demerit system leading to discharge, loss of seniority, and home check-ups of sick employees by company nurses or supervisors. (*Ind. Relations News*)

MANAGING A CONSTRUCTION CONTRACTING COMPANY*

PART 1

By Thomas Kubicek,
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This thesis, based on the operations of a large construction company, illustrates how sound management controls can trim costs and prevent losses and misunderstandings. In the following article, the first of two parts, the author describes the background of the construction business, outlines the accounting system, and shows how the elements of cost are programmed for effective control.

FOR YEARS accountants attempted to apply factory accounting methods to the construction business but invariably failed to get satisfactory results. They failed to realize that conditions in the construction business demand a flexible accounting system. With practically every job different, each construction operation presents new problems. There are some basic principles which are generally applicable to manufacturing as well as to the construction industry. There are some which cannot be applied to construction at all and, finally, there are many which have to be modified in one way or another before they can be applied to the construction business. In other words, the system must be adopted to the business—not the business to the system.

This thesis is an attempt to illustrate how sound accounting and management controls can avoid excessive costs, unnecessary losses and costly misunderstanding. It is written not with the intention of contributing any new methods to existing accounting theory, but as a contribution to the present accounting and management practice in a field which is largely unexplored to date.

MODERN CONSTRUCTION

The construction industry stands today as a dynamic source of strength in the Canadian economy. The contribution of contractors to Canada's growth and economic prosperity is self-evident. In 1957 the Gross National Product hit almost $31 billion. More than one-fifth was contributed by construction projects. Canada's provinces are spending hundreds of millions of dollars every year to convert dusty and hazardous roads into the safe and stabilized driving surface of new superhighways. Drivers and tourists often admire breathtaking vistas in the Rocky Mountains or the Laurentians, but hardly ever realize what a huge task it is to push a highway through such rugged country. Nevertheless, the rapid technological changes in the last quarter of a century have made these seemingly difficult tasks possible.

*Condensation of a thesis submitted for R.I.A. qualification.

The author is Assistant Comptroller in charge of planning, budgeting and supervision of financial statements of G. M. Gest Limited, a large construction company. Prior to joining this company, he held responsible accounting positions with various organizations, the most recent being Steinbergs Limited. A Registered Member of the Society, Mr. Kubicek also holds B.A. and B. Com. degrees from Sir George Williams University and will be awarded his M.A. from the University of Montreal this year.

THE BIDDING PROCEDURE

Plans and specifications are received by the estimating department. The estimator must then make a thorough survey of the site. He has to drill samples, and take into account the water, terrain, climate and weather, transportation, manpower, esthetic considerations, fiscal and legal considerations, and many other factors. No matter how well the mathematical and engineering calculations are done, omission of one important factor in the general survey may mean a tremendous loss for the contractor.

After the preliminary testing is done, the estimator calculates the type and quantity of all materials, labor and the cost of equipment rented or owned by the company as well as all other direct costs. The overhead is applied according to a pre-established basis. When all these figures are priced, an estimated cost results. The most difficult decision in making a bid is the determination of the desired profit. This is often done by the top management of the company. After the percentage of desired profit has been added to the estimated cost, the result is the bid price. The bid must be submitted at the exact time and place directed by the invitation to tender. Failure to comply with any of these instructions may result in complete disqualification of the contractor.

Usually, though not always, the contract is awarded to the lowest bidder. The reputation of the contractor and his financial standing may sometimes be decisive factors. If a company is awarded the contract (the present average chance is about one in fifteen), the resources of many years—money, manpower and know-how—will be geared into action.

Every contract should give a clear and complete description of the work to be done and must be signed by both parties. At a later date, the owner may desire some changes or "extras" in the original plans. All these "contract work changes" should be considered as a new, separate job. Their cost should not be merged with the regular costs. These "extras" should not be made without a "contract change work order" duly signed by the client. It should also be established that the extras are bonafide, and the work was not included in the original drawings and specifications.

Payments are always made in accordance with the terms of the contract and the contract requirements. If progress payments are to be made, the contractor is asked to furnish a monthly billing summary, detailed as to various major phases of the job. This summary would show the percentage of completion of each unit from the start of the project to the end of the period covered by the invoice. Usually there is a holdback of 10% of the total billing by the owner. This is usually retained for about 60 days to six months after completion and certification that the contractor has satisfied all contract requirements and the owner has accepted the project.

TYPES OF CONSTRUCTION CONTRACTS

There are two basic classes of construction contracts: the long term contract and the short term contract.

The long term construction contract, according to Alfred Koplan in the chapter on "Building Contractors" of *Encyclopedia of Accounting Systems*[1], is defined as

" . . . building installation or construction contract covering a period in excess of one year from the date of execution of the contract to the date on which the contract

[1])Encyclopedia of Accounting Systems—Volume I. Prentice-Hall Inc., 1956.

is finally completed and accepted . . . " According to the U.S.A. Internal Revenue Code, persons whose income is derived in whole, or part, from such contracts may prepare their returns on either of the following bases:

a) Percentage of completion method (which requires annual accounting).
b) Completed contract method. (Income is reportable when the contract is completed and accepted.)
c) Hybrid methods.[2] (In practice, the distinction between the first two methods loses much of their simplicity and combination of both is customary.)

Adoption of either method does not interfere with a contractor using accrual, or other method of accounting, to report taxable income.

In Canada the procedure is somewhat different. The Canadian contractors currently have no option to defer their first return until the end of the second year. Nor can they treat the unit price contract as a fixed price contract to be accountable as such.

Anything that does not meet the above-mentioned requirements is classified as a short term contract. Either of these two divisions may be classified further under three general types of contract:

1) THE COST PLUS CONTRACT
2) THE UNIT PRICE CONTRACT
3) THE FIXED AMOUNT CONTRACT (NEGOTIATED CONTRACT)

The *cost plus contract,* also known as CPFF (cost plus a fixed fee) contract:

There are several types of cost plus contracts. The best known are the following:

1) Cost plus a fixed fee
2) Cost plus a fixed percentage for overhead and profit
3) Cost plus a fixed fee or percentage of cost with a maximum total cost.

This type of contract is usual when difficult alterations are to be made, the cost of which cannot be determined beforehand. The contractor supplies all necessary materials and labor; the owner reimburses him for his cost, plus an additional sum in lieu of profit, according to whichever kind of contract is used. Very often, government contracts are the "cost plus" type. There exists a very popular misconception to the effect that this form of contract provides a "gravy train" to the contractor, especially in the case of government contracts.

The "Qualified Contractor"[3] analyzes the unfair limitations in government cost plus contracts as follows:

". . . the real discrimination comes in the limitation on overhead of 10%. There is a 10% limit on profit also. That means that the contractor must absorb all of this overhead in his profit and he must dig down in his own pocket if "direct job expense" exceeds 10%, which is often the case. The ridiculousness of this situation is pointed out by the instance of the contractor having incurred several hundred dollars worth of cost on engineering and checking drawings on changes to determine the effect of the changes on his work. The net changes on his work amounted only to a few dollars in material and labor. But this cost of engineering and checking is properly "direct job expense." It came about because of the changes ordered. It is obvious that these job expenses could not be absorbed in the 10% overhead allowance . . . "

[2]) American Institute of Certified Public Accountants, Accounting Research Bulletin No. 45.
[3]) N.E.C.A., May 1958, pp. 82-83.

It is apparent from this quotation that, especially in the CPFF contracts, the principle of accurately defining direct job expense should be a commendable practice.

On cost plus contracts, the owners' engineer has the responsibility of verifying the contractor's costs. Usually on larger projects, a resident engineer and a resident auditor are assigned. At the time bids are requested, all contractors are informed of company policy with regard to:

1) Overtime payments
2) Items to be eliminated prior to computing overhead and profits
3) Equipment rental and purchase of equipment and tools
4) Purchase of materials
5) Cash discounts
6) Insurance coverage requirements
7) Overhead items
8) Sub-contracts
9) Staffing of the project, etc.

There is a special treatment for cost plus contracts in computing the Quebec provincial sales tax.

The contractor is considered to be the vendor of the materials utilized in carrying out the work, and he does not pay the sales tax on the purchase price. He must collect the sales tax on the price of the materials from the person for whom the work is carried out.

In the *unit price contract,* the contractor agrees to do a number of units of work. All of these units constitute a complete contract. The payment on account of such contract is at a certain price for each type of unit.

The *fixed amount contract* (negotiated contract)

In this case, the contractor obligates himself to carry out the project for a definite "lump sum" or "fixed sum." Every negotiated sum represents a risk voluntarily assumed. In August 1958, President Eisenhower vetoed a bill to reimburse a St. Petersburg, Fla., contractor —Thompson Contracting Company—which claimed $48,966 because of losses resulting from a series of maritime accidents. The President said that losses were part of the risk assumed for profit in every negotiated contract. He quoted as follows:

" . . . where a negotiated contract is concerned, there is no difference between a construction company doing business with the Federal Government or with a private person . . . It seems to me that to depart from it would tend inevitably to bad practices and destruction of the advantages of a competitive bidding . . . "[4]

Most of the negotiated contracts may extend into the far future. Only when one considers that most construction work may depend upon elements such as snow, rain, and other hazards unknown, can one appreciate that contracts must provide something for the unexpected.

The following is an attempt to illustrate and analyze the accounting procedures followed by the Canadian Construction Company. All numerical values represented are fictional and are used for explanatory purposes only.

[4]) New York Times News Service, August 19, 1958.

OUTLINING THE ORGANIZATION

There are companies similar to the one described all over Canada. More than 60 years have elapsed since it started operations as a small privately-owned company. Today it is a large corporation. The company's sales territory includes three geographical divisions: eastern division, central division, western division.

The company's sales have climbed steadily from five million in 1948 to 15 million in 1959. However, owing to conditions of unprecedented competition and steadily increasing production costs during the last few years, a low profit margin became almost an inescapable feature of this company.

Each division consists of three main departments: divisional office, divisional garage, and construction field force. The divisional office is divided into two main sections: general office and estimating.

The general office is mainly responsible for the preparation of the field payroll, divisional costs, stores and equipment control, and divisional billing.

The estimating section is equivalent to the sales department in a merchandising or manufacturing business. The main function of this section is to prepare the bid estimate. When the contract is awarded, the estimators prepare bills of materials and submit copies to the purchasing department and job foremen.

The garage is well equipped to do all repairs on the construction equipment and tools. It consists of mechanics, helpers, painters, the garage foremen and the garage superintendent.

The construction field force is headed by the general superintendent. The entire construction force reports to him through superintendents and foremen who are in charge of time clerks, operators, workmen, drivers and watchmen. This department is the equivalent of the production department in a manufacturing business. The general superintendent reports directly to the division manager, who is responsible to top management for the function and co-ordination of all phases of the operations of his division.

Notwithstanding the three geographical divisions, in previous years the company was still treated accountingwise more or less as one unit. Last year, because of continued expansion, it was necessary to re-examine the organizational structure to make sure that the profit responsibility was clearly defined and identified with each operating division. The new method of cost allocation was based, therefore, on the division of the company into three operating divisions. The breakdown of all data into three categories serves not only as a guide for day-to-day management thinking and planning, but also provides a sound basis for establishing better overall control and evaluation media on the profitability of each division. This year again, the management has attempted to improve operating methods and procedures. A great deal of time and energy was spent evaluating and re-evaluating the present organizational arrangements.

There was no doubt that the Canadian Construction Company had an unutilized potential. It was believed that volume, so essential to liquidation of our standby costs, could be greatly increased if the company was flexible enough to undertake new lines of work. In order to utilize the experience and highly specialized know-how of some

of the company's senior engineers, another radical change was made in the organization of this company. The following functional divisions were created:

1) Underground conduit division
2) Electrical division
3) High voltage cable division
4) Gas line division
5) Water and sewerage division
6) Civil construction division
7) Mechanical division.

This change resulted in an organization consisting of head office, seven functional and three geographical divisions.

PRINCIPLES AND OBJECTIVES OF THE SYSTEM

The most elaborate and detailed system ever devised would be of little use in the construction industry if it could not be kept up to date. The general requirements are speed, accuracy, simplicity and flexibility.

With this in mind, we devised a cost control system that could be set up on a standard accounting machine and would provide accurate figures when needed. It is universally recognized that lack of such information is a serious and often fatal handicap.

Our objective in building a new accounting and cost system was to:

1) Improve the general accounting plan to be able to record day-to-day transactions with clarity and sufficient analyses.
2) Improve cost control to ascertain the cost and profit on each project with a minimum of effort and expense and a maximum of information.
3) Effect a continuous accounting control to show differences between the actual results and projected anticipations.
4) Make possible projections of operating results for such periods in the future as may be deemed necessary.
5) Point out weak spots that cause operating losses and stimulate cost reduction through improved methods.

CLASSIFICATION OF ACCOUNTS

When it was time to go ahead with departmentalizing, it was apparent that our old chart of accounts was not flexible enough to allow for expansion now that there were more divisions. It was imperative to provide for control of the newly-created divisions in order to prevent the serious condition wherein losses from one division unknowingly absorb profits from other divisions. Before anything could be done, a new accounting code manual had to be prepared. On the basis of our new organization chart, all the accounts were arranged so that each division was divided into departments and functional areas of responsibility. The two main groups were operating and service departments. The basic principle governing allocation of expenses to the new accounts is to charge all direct charges which can be identified with a particular division to that division. Service departments are kept separately and are closed to operating divisions at the close of each accounting period.

ACCOUNTING RECORDS PECULIAR TO THE BUSINESS

The basic accounting records consist of the usual books of original entry with payables, receivables, expense and general ledgers. The general ledger contains asset and liability accounts, a revenue account for contract billings, and expenditure accounts for job materials, direct and indirect labor, and overhead. The details of the overhead are recorded in the expense ledger broken down as per divisional,

departmental or other cost centres based on our accounting code manual.

The essential and basic principle of our system is that every payment must be charged against the operation which made that outlay necessary.

Although these accounts may vary considerably in form, their basic purpose is the same as in any other business. Integrally related to the accounts payable function is the contracts-in-progress ledger.

In this ledger, each job is set up as soon as it is awarded. Every job is assigned a number in this record. This number is very important. It is used for identification purposes on all charges to the particular contract. In the past, the company used numbers combined with alphabet letters, indicating the year.

To bring order and system to the job numbering and to facilitate easy identification of all our contracts, it was decided to co-ordinate the job numbers with our accounting code manual. At present every job number consists of the following digits:

The Year	Geographical Division	Functional Division	Job Classification	
8	2	16	Municipalities	1 – 100
9	3	17	Bell Telephone	101 – 200
0	4	18	Government Agencies	201 – 300
1		19	Miscellaneous	301 – 600
2			Cost Plus Jobs.	601 – 800
etc.	etc.		General Maintenance Contracts	801 – 1000

This new system of numbering our jobs facilitates, simplifies and reduces clerical work and aids in avoiding errors in cost allocation. In posting to the contract cost ledger, there is a further detail classification as to the elements of cost, kept in a subsidiary ledger.

In accounting for construction costs, it is a good procedure to break down the various operations into their basic work units. For instance, building of concrete forms is a sequence of events which could be broken down and consolidated into three estimating and costing units:

1) Making 2) Erecting 3) Stripping

Different construction companies use different units.

This breakdown into units is always a time- and money-consuming procedure. In each particular case, the cost of keeping such detail would have to be justified by the benefit derived. It is for the particular company to decide which would be the most practical and economical way of controlling its construction costs.

Since the majority of our present jobs could not be broken down as to functional units because of prohibitive costs, we have chosen the breakdown of our construction costs by elements of cost.

This classification corresponds with cost estimate summaries prepared by the estimating department and facilitates current analyses and comparison of the actual with the estimated figures. The system of classification is very simple and economical; under present conditions it gives us satisfactory results.

In our old system of cost reports, we used to break the total cost of the job into two elements only:

1) Labor (direct and indirect)
2) Other direct charges (including direct materials, indirect materials, fringe benefits, expenses, etc.)

Since the estimated figures were kept secret, no comparison was made of the actual with the estimated figures. It was almost impossible to prepare an analysis of the job cost because the essential data were not available. Every item had to be scrutinized separately. Our present procedure of coding all job expenses according to the pre-established six-code classification facilitates the control through more timely and accurate analysis. The results also may serve as a guide in future construction of the same nature.

CONTROLLING DIRECT LABOR COSTS

According to our interpretation, direct labor is that kind of field labor which can be identified and charged directly to a specific job.

Generally speaking, there are two factors which enter into any control of labor, and these are:

1) Price 2) Productivity or efficiency

Not much can be done about the price of labor but the productivity factor is completely within the domain of the supervising personnel on the job and in the office. The contractor who recognizes this fact and improves his field supervision would avoid tremendous losses on some jobs. Such control must begin with planning the work, selecting material and procuring and delivering materials at the right time and place by the application of work simplification methods. In underground construction (conduits, sewers, etc.), the element of labor amounts to approximately 40% of the total sales value. In cases where the owner supplies the material, the ratio is much higher. It is apparent then that the loss suffered on a negotiated contract is the direct result of an unfavorable labor quantity variance. This variance may be caused by the following:

1) Error in estimating 2) Poor efficiency
3) Bad weather or unexpected soil conditions

The most excellent job done by the estimator may never be "capitalized" if the engineering personnel, and even the top management, does not make it a habit to keep all jobs under close surveillance. Usually there is no time clock used in the field. Therefore, it is important to establish some kind of a check system for field labor. All field employees are given identification badges. It is usually a good procedure to assign workmen badges with numbers designating their activity.

The badges should be turned in by the men upon leaving work and picked up when beginning work. Badges not picked up may be used to verify lost time in case of a surprise visit from the divisional office to check on the job personnel.

About two years ago, when we decided to attempt control of our labor cost, we faced the following problems.

1) Lack of accuracy in field reporting
2) Late field reports
3) The problem of idle time of drivers and foremen.

A firm policy concerning foremen's duties, emphasized by top management, and

a long educational process answered the first two problems. Far more serious was the problem of idle time. Now it was management's turn to be educated. At that time, our company employed 80 foremen earning approximately $8,000 a week ($100 a week each). In addition, we had ten superintendents earning approximately $1,300 a week ($130 each). All this labor used to be charged as productive labor to jobs. This was not so serious during the busy summer months, but in the quiet winter months this procedure caused a real problem. During January or February, the foremen and superintendents took their vacations. Although all their wages all year round had been charged to contracts, their two or three weeks' vacation expense was being charged to what was called a yard expense. When the foremen returned, their full time was charged to a few odd jobs which were left from last year and carried on during the winter. It was established that, by this procedure, approximately $100,000 of foremen's idle time was hidden, being charged as productive labor. Naturally, these contracts had to show losses. Thus, the historical costs had lost their value as a measuring stick and management was under the impression that these jobs were not worth securing. The truth was that some of these contracts proved to be excellent contributors to the company's gross profit margin.

Under the present system, we are still charging foremen salaries as direct labor but as soon as there is no job for a particular foreman, regardless of whether he is helping around the yard or as a second foreman on the job, his wages are shown as idle time. Our guide is the original estimate; if there was only one foreman planned for the job, it should be charged with only one foreman. Since the duty of the superintendents is to supervise more than one job at a time, it is more practicable to charge their salaries to the operating overhead account.

Our management can benefit from this procedure in two ways:

1) The weekly idle time reports are a very serious reminder to top management, calling for remedial action before it is too late. (Sometimes additional work has to be considered at a differential cost.)
2) Our jobs are charged on a more equitable basis. This results in a historical cost which can be used as a yardstick. It facilitates comparison and analyses of the actual costs with the estimated costs. Such a comparison points out the degree of productivity for each labor crew.

Accounting for labor begins with the daily time records. There is a multitude of time reports being used by construction companies. Those whose laborers are not being shifted during the day or during a particular week from job to job, can economize by combining on the same form the report of the time consumed and the report of work accomplished. In this way, the amount of paper work and number of documents handled are reduced. Other companies, where laborers are moved from job to job, very often benefit from having an individual time record as illustrated on page 233.

This may be considered equivalent to a time clock card. This report is very simple and would facilitate fast job distribution. It consists of two copies. The original copy of this form is a single sheet of paper; the duplicate is of somewhat heavier stock and is perforated so that it can be torn apart into individual job tickets. These tickets are accumulated daily and are kept sorted by a job or unit number. At the end of the week, the job tickets are stapled together for each distribution. The total for

Badge No. ..... Week Ending .....

Name .....

O.T. Hrs. ..... O.T. $.....

Rate..... S.T. Hrs. ..... S.T. $.....

Total Earnings $.....

						Total Deductions
INCOME TAX		PEN-SION	UNION DUES	MISC.	U.I.C.	Net Pay $.....
FED.	PROV.					

Date	JOB NO.	HOURS	AMOUNT
Date	JOB NO.	HOURS	AMOUNT
Date	JOB NO.	HOURS	AMOUNT
Date	JOB NO.	HOURS	AMOUNT
Date	JOB NO.	HOURS	AMOUNT

each distribution may be written on the job ticket. Labor postings are then made from the summarized tickets to the job cost ledgers. The accumulated payroll accrual must tie with the total gross pay.

The original copies of employees' time records are summarized for each individual for the week; total hours and pay are written on the top copy. The payroll is prepared by machine directly from these time records. The employees' earnings, record, pay

statement, cheque register and payroll journal are all printed at the same time.

CONTROL OF DIRECT MATERIALS

By direct materials, we mean all those construction materials which become part of a specific job. In some divisions of our company, the element of direct materials is proportionately larger than the element of labor. In any case, establishing effective control over direct materials is of vital importance.

When talking about material control, where do we start? Material control goes back farther in the scheme of planning construction work than the issue of a requisition entering the stores. The important control points are:

1) Procuring materials at a price which is most economical, having regard to quality requirements.
2) Establishment of a flow of materials to ensure continuity of construction process.
3) Proper inspection, handling and storage of materials received to reject faulty goods, prevent deterioration and avoid losses.
4) Proper issue of specified quantities and kind of materials to ensure economical and planned use of materials.
5) Control of extra issues in excess of the estimated allowance.

Proper purchasing procedures play an important part in controlling and having proper accountability of the material inventory.

There are three possible sources of materials to be included in the job costs:

1) Materials delivered to the job site directly from suppliers.
2) Materials transferred from another job.
3) Materials issued from central stores.

In our company, the materials required are ordered under the supervision of the estimator who prepares the bill of materials. The initiation of the purchase orders and follow-up of deliveries is the responsibility of a purchasing department. All ordering is done through purchase orders prepared in six copies, distributed as follows:

1) Original copy—sent to the supplier.
2) Follow-up copy—stays in purchasing department.
3) Office copy—placed in master purchase order file for use of accounts payables.
4) Estimating copy—placed in individual job file.
5) Receiving report
6) Foreman's or stockkeeper's copy

(5) and (6): In case of field deliveries, both of these copies go to the foreman.

The foreman keeps his copy for reference. Upon receipt and inspection of materials, the foreman fills in the quantities received and forwards the receiving copy to the office. The inspection of materials received, whether in the stores or in the field, is very important.

If the wrong specification of materials is delivered and many months pass before the error is discovered, the fault lies in the haphazard method of receiving and lack of inspection of goods received.

The purchase orders are pre-numbered according to the job. This way of numbering has a definite advantage compared with the consecutively pre-numbered purchase orders used especially for costing purposes. In order to determine the cost of materials ordered or delivered to a specific job, all that has to be done is to take an adding

machine tape of the purchase orders filed in a specific job file. For convenience and economy, one copy of the purchase order serves as a receiving report. All the receiver has to watch is the quantity received and the condition of the merchandise. In the case of several shipments originating from a single purchase order or partial shipments, a "back order" has to be issued by the purchasing department. When suppliers' invoices come in, the usual procedure is followed for checking and payment.

MATERIALS ISSUED FROM STORES

A very strict routine must be set for the issue of materials from stores.

It is doubtful if there is any field in which greater abuse of valuable assets exists than in the construction business. Too frequently, foremen seem to think they have the right to help themselves without any issue whatsoever.

There is another bad habit which often prevails in construction. For instance, materials are ordered for and shipped to a specific job. Such shipment, in full or in part, may have been transferred to another job without any proper accompanying transfer slip. The foremen were probably under the impression that as long as it stays within one company, no harm can be done.

Under such conditions, no analyses of historical costs were possible because jobs requiring 10,000 feet of fibre pipes were charged 20,000 and jobs requiring 20,000 were charged 10,000 feet. Stores have issued 1,000 board feet of lumber to a particular job; when it was finished, the same job returned 3,000 board feet of lumber and we have never found out if it multiplied right on the job or from whence it came.

With new divisions established by our company, the investment in stores rose to a monthly average of $160,000. Naturally, with such a high investment, it was finally realized by management that inventory control should become the backbone of our operations.

The first step to improvement of our inventory procedures was the introduction of new detailed accounts for items stored in large quantities, e.g.,

3-03 Sand and cement
3-04 Stores lumber
3-05 Misc. materials for jobs
3-06 etc.

The second step was the introduction of complete perpetual inventory records. We find them absolutely essential for good "housekeeping" and production control. To effect this control, the following records were introduced:

1) Pre-numbered material requisition form
2) Material transfer from job to job
3) Subsidiary ledger (Kardex)
4) Weekly material requisition summary
5) General ledger (inventory control)
6) Contract cost ledger (materials issued to jobs)

At present, there are no more issues from our stores without a properly-signed requisition. This form is prepared in triplicate. One copy is kept by the stockkeeper, one copy by the foreman and the original is forwarded to the inventory control clerk for adjusting stores records. We are using the average method to price our inventory. The second step is to charge the materials to the jobs to which they were issued. All material requisitions are summarized by jobs and entered in the "material requisition

summary." This summary, properly balanced, is posted weekly to the "contract cost ledger" in the material section and credited to the general ledger. It is important to note that in the Province of Quebec, this procedure is vitally affected by the provincial sales tax legislation. According to the regulations governing the application of retail sales taxes, contractors do not have to pay the sales tax at the time of purchase of materials for their stores, except for such materials which are purchased for the contractor's own use, i.e., maintenance, repair of equipment, office supplies, etc. However, sales tax must be set up at the time when issued to a particular job. Since the jobs may be spread all over different tax territories, a great saving could be effected by the difference in tax rates. Another great advantage of this provision is that no money representing the portion of tax is tied to the materials kept in stores.

Profits come from goods that move rather than from those that lie in stores. Slow inventories are a burden. Therefore, it is very essential to keep all stores in such a way that there is neither an over-supply nor a shortage. Our goal, as far as stores are concerned, is a well-balanced situation where the cost of keeping would be equivalent to the cost of aquisition.

MATERIALS OF CONSTRUCTION

In the construction industry, there are three different classes of materials:

Direct materials
Materials of construction
Indirect materials

The first group has already been discussed. The second group—"materials of construction"—consists of those materials required during the course of construction for making forms, shoring, bracing, supporting, etc. Nevertheless, these materials do not become a part of the job. If handled with proper care, many of them can be salvaged and re-used on several future jobs. If care is not exercised, the wastage through mishandling, breakage and theft is great. Lumber is a typical material belonging to this group.

The third group is "indirect materials" or job maintenance materials. This class of materials cannot be economically identified with any particular job and is considered a part of the overhead.

This classification of materials facilitates the determination of factors responsible for profits and losses. It serves also as a guide in future estimates of similar jobs because there is more than a likelihood that the estimator never thinks of these items as being part of the direct variable job overhead.

EQUIPMENT RENTAL

Another very important element of construction costs is the equipment rental. Since construction equipment is to a certain degree replacing general labor, the cost of same is in direct relation to the cost of direct labor. There are three ways of accounting for rental common among different contractors:

1) The ownership costs (depreciation, taxes, insurance, licences, etc.) as well as the maintenance and repair costs are considered as part of the general overhead. Job estimates are charged a flat percentage based on direct labor cost or any other basis selected. This may be a very simple procedure for a small contracting company. However, it is not accurate, because jobs which do not use any equipment at all or not as much as other jobs may be

penalized by having to absorb too high an overhead percentage and jobs which require more equipment may be bid too low.

2) The second group of contractors does not consider its ownership cost at all. Often the equipment may be operated by the owner himself and the rental charged represents an amount drawn as weekly wages. This group of contractors does not know very much about depreciation or replacement reserves. However, this procedure does not pay because most of these contractors end in bankruptcy before they realize what actually has happened.

3) The third group consists of contractors who charge their jobs with a rental for any and every piece of equipment used on the job. Such equipment rental is calculated to absorb all ownership, maintenance and operating costs. This is the most accurate way, based and controlled through operating budgets.

Any equipment estimating must consider the three following factors:

1. Equipment productivity 2. Rental rates
3. Overall job scheduling.

Wherever a new or unused piece of equipment is concerned, the estimator consults the manufacturer's field representative or sometimes makes a field trip to study unusual applications of equipment. Beforehand planning and scheduling of equipment may save the contractor thousands of dollars in waiting, idle time and costly outside rental. For this purpose, it is highly advisable to prepare a plant utilization chart.

SUB-CONTRACTS

In our business, we distinguish between two kinds of sub-contracts.

1. Work sub-contracted to outside contractors
2. Work sub-contracted to one of our divisions by another division

Work sub-contracted to an independent contractor may be either:

1. Cost-plus contract—or
2. Negotiated contract

On smaller jobs, the sub-contractor renders his bill after the job has been completed. If the job covers a longer period, a sub-contractor may submit progress billings based on the percentage of completion. When a sub-contractor bills the prime contractor for a progress payment, the full amount is charged to the construction costs. The contra credit is divided between an account called

"Amount due to sub-contractors—current"

"Amount due to sub-contractors—retained percentages"

The prime contractor usually tries to keep this amount until the whole job is completed. It serves as a guarantee if something goes wrong with the sub-contractor's work during the period between the end of the sub-contract and the final completion inspection of the total job. If the prime contractor's policy calls for early release of the sub-contractor's retention, it might well be necessary to provide a reserve for such losses. However, there is a tendency to treat smaller sub-contracts more like a small installation or service job and less like a sub-contract. However, it must always be kept in mind that the prime contractor is legally responsible to the owner for the work, the conduct and any liens that may result from the activities of a sub-contractor.

In a case where work is sub-contracted by one division to another within the same company, it is necessary that the allocation of costs be done accurately. As far as the efficiency and the revenue are concerned, the sub-contracting division would issue an "inter-divisional transfer" billing the prime-contracting division for the original amount of their bid plus any authorized extras. Thus, if the part of their work was estimated and executed accurately, the division benefits by the amount of profit exactly as if it were done for any outside client. However, if an error had been made in estimating or the work executed inefficiently, it is this division which absorbs the loss resulting from their work. In order to avoid duplication of revenue within the same company, the following entry takes place:

Prime-contracting division	*Sub-contracting division*
Dr. .... Revenue	Cr. .... Revenue

This procedure helps to measure the efficiency of each division.

RESERVES

In the construction industry more than in any other, it is vitally important to provide sufficient reserves for any element of cost which may enter into the picture to ensure a fair return for the contractor's work and risk. The following reserves must be added to the bid quantities and accounted for later in all cost reports:

1. Foremen's vacation reserve
2. Perishable tools reserve
3. Reserve for contingencies, etc.

The customary procedure in contracting is to charge the foremen to a particular job as long as they work there. However, very rarely is provision made for vacation or idle time. This procedure is inaccurate and results in underestimating. On the assumption that the vacation allowance is earned in definite proportion to the time spent on each particular job, every job is charged with a fixed percentage in lieu of vacation based on the actual time worked there.

Another very important reserve to be provided is the "perishable tools reserve." The procedure common to most contractors is to issue perishable tools at cost to a particular job and credit the same job for tools returned. This procedure does not allow consistent and accurate costing based on the estimate. We have worked out a special procedure charging each job equitably with a certain percentage based on direct labor. This procedure is based on the assumption that there is a direct relation between the perishable tools (such as shovels, picks, hammers, brooms, helmets, etc.) and the direct labor: one man, one shovel; ten men, ten tools.

The total annual purchase of these tools is budgeted at the beginning of the year for each particular division. This amount is divided into the budgeted cost of direct labor and thus we establish a ratio of small tools. This ratio is applied by the estimator to each specific contract and every job in progress is charged with this percentage based on its direct labor force.

Similarly, other reserves may be created and allowances to provide for same added to the estimates.

Thus we can say that the basic principle of our programming of cost control consists of proper budgeting, eliminating and evaluating of the unknown.

CLASSIFICATION OF OVERHEAD

In construction accounting terminology, we recognize two classes of overhead:

direct overhead and indirect overhead.

Direct overhead includes all variable miscellaneous expenses such as payroll fringes, timekeeping, overtime premiums, perishable tools, and other expenses incurred in connection with a particular job. These expenses are fully absorbed by each specific job.

Indirect overhead is a special group of expenses which cannot be identified with any job and are generally called period or fixed expenses. This group can again be subdivided into two classes: operating overhead and general administrative overhead.

OVERHEAD AND BUDGETARY CONTROL

There are two fundamental requirements for attaining control of overhead costs:

1. Chart of accounts constructed to reveal clearly the major categories of overhead.
2. Sound organizational structure is needed for effective budgeting of overhead costs and their control.

Any classification of overhead costs begins with the determination of responsibilities for cost incurred. For this reason, we have constituted an organizational unit such as a division having a head accountable for the costs incurred by the activities of his division. Such classification fixes the responsibility for control and, at the same time, facilitates allocation of the costs to the contracts and departments within each division. All costs within each department are classified by the nature of the expenditures. This classification is uniform throughout the company so that costs incurred in different departments may be grouped whenever desired.

Departments	Idle Time		Telephone	Travelling, etc.
	Drivers	Foremen		
Underground Construction..	2,000	3,000	350	1,500
Electrical Division.....	100	2,000	250	1,500
Gas Line Division.....	1,500	150	50	500
Water and Sewerage.....	300	—	250	—
Telephone Division.....	—	150	250	—
Civil Construction.....	150	100	50	1,000
Garage Operation.....	—	—	50	—
TOTAL.....	4,050	5,400	1,250	4,500

Cost reports prepared to assist management in controlling overhead costs provide comparisons between the actual cost of the most recent period and to date with the budgeted costs. To be more effective in controlling our overhead costs, expense budgets are prepared in advance for each department. All these budgets, although fixed in nature, are prepared for a forecasted volume covering the expected range of activity. With the help of such guides, it is relatively easy to determine how successful

each department or division has been in its efforts to control costs. By analyzing the details, it is possible to trace variances to individual items of cost as well as the reasons of over-run.

APPLICATION OF OVERHEAD—OVERHEAD RATES

All our departments are classified either as productive or service departments. The cost of the service departments has to be closed into the productive departments. The application of the overhead costs to jobs takes place in two stages.

The overhead is applied to jobs on a predetermined basis. There are several bases commonly used by different contractors such as the direct labor cost, direct material cost, prime cost, equipment costs, the total direct cost multiple basis or, in some cases, even a flat rate. It was mentioned before that there is a wide variation in individual jobs in the construction industry. This variation poses allocation problems rarely present in manufacturing operations.

Any attempt to use the same allocation formula in each different type of job would result in serious distortion. However, it would be uneconomical and impractical to develop a formula for each job. To overcome this problem, so acute in the construction business, we believe that divisional overhead rates relative to the functional activity of a particular division may be quite adequate to average out these differences. This procedure seems to be an acceptable treatment resulting in reasonable allocation to the different kinds of jobs. As a matter of fact, it is necessary to stress that the consistency here is more important than the method of allocation.

We have chosen the following formula:

$$\text{Overhead rate per dollar of cost} = \frac{\text{Budgeted Divisional Overhead} \times 100\%}{\text{Budgeted Divisional Direct Cost}}$$

Since dollars are divided by dollars, the rate is in the form of percentage. These divisional overhead rates are used to arrive at the correct bid. Otherwise, we believe the overhead allocation serves no purpose except to provide information for bidding. If not used for this purpose, the figures have no function in our accounting set-up.

In our reporting we prefer to use the direct costing method, whereby we match current production which in construction industry may be considered as equivalent to sales, with current actual costs direct and indirect. Most of the elements comprising overhead in our business are of fixed character for at least a year. But they are not irrevocably fixed in total amount for a longer period.

Our method of reporting seems to have the following advantages:

1. Separation of fixed expenses from the variable ones allows management to determine the effect of changing volume on profits. This is used both for interpreting the results of past operations and planning future operations.
2. Confusing overhead volume variances are eliminated.
3. This procedure may facilitate marginal bidding during the early spring months in order to liquidate accumulation of heavy fixed costs.

(*This Article to be Concluded in the July Issue*)

7

Cost and Management

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Editorial Comment . . .

THE PUBLIC today has more means of communication than has been available in any previous age. Yet it is doubtful if any generation was more confused as to the basic forces that shape and influence our society. Each day we are bombarded with problems that face different groups and, in each case, the cause of the problem differs depending on who tells the story. In many cases, what is stated as a cause is really an effect.

Manufacturers who sell to the domestic markets claim that higher tariffs are needed for their protection, while the exporter wants to abolish all walls in order to get preferential treatment from the country buying his goods. The labor force, represented by unions, claims that automation and imports are causing unemployment, while the employers counter that high wages are putting them out of world markets and out of business. Governments are asked for more protection, more jobs, and more benefits, but at the same time the people who make the demands want less taxes and less government interference. On the other hand, government spokesmen present rather confusing reports on trade and unemployment and they tell labor and industry to get on with the job and stop the bickering.

No doubt the various groups who claim that the game is not being played according to their rules deserve a sympathetic hearing. The question arises: to whom should their appeal be directed? If each of these groups asks for intercession from some governmental body, all of them can hardly expect action that will be of lasting benefit, because what may aid one group may magnify the distress of the others. If policies are implemented to aid the largest or most influential body, then this is abdication of responsibility rather than good statesmanship.

These social and economic problems are closely interwoven and they have been with us to a greater or lesser degree for a long time. They have been grounds of dispute for economic theorists, battlegrounds for labor and owners of industry, and have been used as stepping stones for the personal benefit of some of the most successful politicians whose offers of pie in the sky are greeted by the naive with

more faith than is justified. All the opposing camps in these disputes have stated truths and half truths colored by subjective desires. To the public in general, whom in the final analysis the outcome of the dilemma will affect, these charges and counter charges have long reached the stage of hopeless confusion. The real problems are not apparent; only certain aspects that suit the spokesman are exposed. Indeed, it is very doubtful if the leaders of the various groups are really aware of the basis of the dilemma.

Generally, it seems safe to state that most responsible and thinking people would agree that our way of life, our society, our economic system, or the encompassing unit in which we live is being challenged or, at the very least, is open to challenge from within and from outside ideologies. If Canadian leaders can at least agree in acknowledging that all is not right and stop ignoring distasteful realities in the hopes they will vanish, then a first important step will have been taken to "take up arms against a sea of troubles, and by opposing end them."

Despite our reservations about the worth of certain committees, commissions and like groups, a second necessary and all-important step would be the formation of a basic study group. It would seem that this group should be sponsored by our government statesmen and be free, as far as humanly possible, from political partisanship. It should include the ablest thinkers from, at least, labor, industry, education, and government and it should not be too large a group.

Finally, it should be emphatically clear to these people that they are not there to discuss the questions of the day or to present the desires of the group they represent. Rather, their object is to chart the progress and future of humanity over the long run, and to enquire into the basis of our social, political and economic structure. This study of the fundamental aims, desires, and fears that motivate man should be invaluable in formulating basic policies that would best serve the progress of the people as a whole. Later, when clear-cut basic objectives are found, the action of any social group could be assessed by the contribution that act makes in attaining these goals. The initial work will be a painstaking appraisal of a mass of data, some of which is fact and much of it fiction. A major attainment of such search and analysis would be to isolate and identify basic problems rather than to offer a neat set of answers.

This project is not a job for a day or a week or for any definite time limit. Each day, however, it becomes more apparent that there is an urgent need for a beginning. It is time for industry, labor, government, and any other large representative and powerful group to lay aside, even momentarily, subjective ambitions and to realize a responsibility as leaders of a great country with many divergent interests. No doubt the first labors of a study group would be fraught with discouragement merely as a result of trying to unravel the intricate ramifications of the difficulties in which we have become ensnarled. If these pioneers are chosen because of their wisdom, ability and dedication, there is no doubt that they could measure the task and accomplish something constructive. Perhaps their progress would not be evident to this generation, but is is not an unlikely speculation that unless a new creed is prepared for the future, this age, despite its material progress, will have left a rather barren heritage to our children's children.

OUR NEW PRESIDENT

GEORGE H. GREENHOUGH, R.I.A., F.C.I.S.

ELECTED PRESIDENT of the Society of Industrial and Cost Accountants of Canada at the 39th Cost and Management Conference held recently in Montreal was George H. Greenhough, R.I.A., F.C.I.S.

Born and educated in Hamilton, where he is Secretary-Treasurer and Director of The Reid Press Limited, Mr. Greenhough has resided with his wife and daughter in nearby Dundas for the past 12 years. In his long and valuable association with S.I.C.A., he has become a well-known and popular figure both at Head Office and in the Hamilton Chapter. Receiving his R.I.A. certificate in 1942, he served as Chairman of the Hamilton Chapter in 1945-46 and as President of the Ontario Society in 1953-54. Over the years, he has held many official positions in the Society and been a member of numerous national and provincial committees.

Mr. Greenhough is a Fellow of the Chartered Institute of Secretaries, a member of the Hamilton Thistle Club and the Hamilton Chamber of Commerce, and of the Budget Committee of the Hamilton United Services, one of several civic organizations in which he is active.

His complete familiarity with all phases of Society work and his considerable administrative abilities eminently qualify Mr. Greenhough for the job of President. In a year when S.I.C.A. is seeking to consolidate its advances and broaden its professional and educational influence, we are fortunate in having the kind of experienced leadership that Mr. Greenhough will undoubtedly bring to his new office.

DISTRIBUTION COSTS AND MARKETING DECISIONS

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Accountants agree on the need for more effective control of distribution costs, which account for about 51% of the consumer dollar. Harder to agree upon are the bases for distribution costing. This paper analyzes some of the problems inherent in the subject and suggests approaches towards better costing for marketing decisions.

IT has been estimated that distribution costs account for about fifty-one percent of the cost of the consumer dollar while production costs comprise the other forty-nine percent. This does not mean that the average firm incurs its total costs in this ratio. Each individual firm is only a single link in the chain which extends from the producer to the consumer. The manufacturing firm may incur a much greater proportion of production costs, but unless its sales are made directly to the ultimate user there remains the task, with the concomitant costs, of distribution.[1]

In spite of this relative importance of distribution costs, most cost accountants concede that accounting for distribution has not been developed to as great an extent as production cost accounting. Yet, it is recognized that this field is one in which economy through cost control is badly needed because this is the basis for programming of market action.[2] Few manufacturers know exactly how much it costs to sell a particular product to a particular type of customer in a specific location. And the number of producers who know how much it should cost to make a similarly particularized sale is even smaller. Nevertheless, such information is highly desirable, if not essential, to good control of company costs.[3]

PROBLEMS OF DISTRIBUTION COSTING

The explanation of this situation is probably a twofold one. Historically, the need for detailed distribution cost accounting is a comparatively recent one. It arises from the increasing importance of distribution occasioned by concentration of production with expansion of markets and from the greater need for efficient distribution due to

[1] J. Brooks Heckert, "Back to Distribution Costs," *The Journal of Accountancy*, June, 1945, p. 456.
[2] Editorial, "A Study in Distribution Costs," *The Journal of Accountancy*, January, 1946, p. 6.
[3] Paul W. Atwood, "The Manufacturer Looks at His Costs of Distribution," *The Accounting Review*, March, 1934, p. 28.

Professor Edwards holds an M.B.A. degree from the University of Denver and a Ph.D. from the University of Texas. He is also a C.P.A. in Texas and Michigan. Formerly with the firm of Touche, Ross, Bailey & Smart, he is a member of some eight accounting and business organizations and is President of the Lansing Chapter of the National Association of Accountants. He has served on the Advisory Committee on Professional Development of the American Institute of C.P.A.'s and the Committee on Professional Education of the Michigan Association of C.P.A.'s, and is co-author of the accounting series *Elementary and Intermediate Accounting*.

increased competition in distributive activity. This will be especially important in the future because the second type of factor accounting for the slower rate of development of distribution cost accounting is a function of the inherent nature of distribution as contrasted with production. Production of similar products by different firms will use very similar methods in many cases. In contrast, distribution of such products may be performed efficiently in a number of different manners. Distribution methods also are generally much more flexible than are production methods. A large outlay for productive facilities of a specific type usually ties the firm to a certain narrow range of production alternatives for a considerable period. Distribution methods are normally readjusted by shifting from one combination to another as a continuing process. Another point of difference lies in the relative importance of psychological factors. Production is much more subject to mechanical control than is the reaction of a customer to a salesman's efforts. All these factors point to the lack of standardization of distribution activities. Without some degree of standardization, performance can only be measured by highly subjective evaluations.[4] Still another difficulty is that of securing basic information. There are no timekeepers or inspectors on hand when a salesman contacts a prospective customer. Even when the basic cost information is available, the job of interpretation is extremely difficult. Distribution costs, to a much greater degree than production costs, contain many joint and indirect costs which must be assigned to specific results. Indirect costs are troublesome in production accounting; they are even more so in distribution.[5] But the need for adequate distribution cost accounting is so great that these difficulties must be overcome, as have many of the problems of production cost accounting.

WHAT ARE DISTRIBUTION COSTS?

Distribution costs have been defined as all costs necessary to get the order from the customer, deliver the goods, account for them and collect the account.[6] This is a reasonably broad definition but not the broadest possible because, in essence, marketing begins with the determination of increasing wants and the delineation of market opportunities. In one sense, all justifiable costs are distribution costs. Theoretically, the objective of the firm is to maximize profits. This can only be done through sales at a price greater than cost. If then the distribution of its product at an advantageous price is the primary objective of the firm, all activity should be directed toward that objective and all costs incurred may be viewed as contributing to the distributive process. On the other hand, it could be argued at least equally well that all justifiable costs are production costs. This argument would contain the implicit shift of meaning of production from production of goods to production of utility as measured by revenue. The economist usually recognizes four types of utility; form, place, time, and possession. Production, as commonly defined, involves only the creation of form utility. Distribution, in the usual sense, refers to the providing of time and place utility and possession. At any rate, such functions as sales promotion, shipping, and collecting are as productive of revenue as is the fabricating

[4] James W. Culliton, "The Management Challenge of Marketing Costs," *The Harvard Business Review*, January, 1948, p. 81.

[5] J. Brooks Heckert, *The Analysis and Control of Distribution Costs*, Ronald Press Company, New York, 1940, pp. 15-17.

[6] William B. Castenholz, "Selling and Administrative Expense Analysis as a Basis for Sales Control and Cost Reduction," *The Accounting Review*, June, 1931, pp. 125-9.

process since all are essential to profitable operations. But accounting classification or division is based in general on responsibility. In most manufacturing concerns, the management organization is divided into the three broad functions of production, distribution and finance. It is always difficult to say which function is the major one. Since all three are essential in some degree, any attempt to rank them resolves into a dilemma analogous to which came first, the chicken or the egg. This situation is becoming complex today because of the increasing tendency to specialize administrative functions.

The cost accountant must handle company costs through three major stages. He records costs as they are incurred, traces costs in terms of internal activity, and assigns costs to periodic revenue.[7] It is in the second and third stages of this sequence that the treatment of production and distribution costs differs. The tracing of costs within the firm must be done on the basis of some type of cost-unit. For production costs, the unit is usually a specific quantity of the product, as a single automobile or a ton of steel. For distribution costs, the unit is not so easily chosen.[8] Only a few business costs are incurred on a clear-cut unit of product basis. Some material, labor, packaging and delivery costs can be related directly to the units of product to which they apply. Other costs are incurred by the enterprise as a whole as a necessity of being in business. Just as there are production costs closely identified with units of product, so too there are distribution costs with a like relationship. Delivery costs, packaging, and some service costs are like indirect production costs. These "bread-upon-the-water" costs are not clearly identified with units of product sold. The problem of separating costs jointly incurred for the sale of several types of product and of separating results which jointly stem from one such cost thus arises. This is the crux of the distribution cost challenge.[9]

CLASSIFICATION OF DISTRIBUTION COSTS

One method of sorting distribution costs is based on the function for which the costs are incurred. The entire marketing effort is divided into such component functions as direct selling, advertising, warehousing, transportation, credit and finance, etc. Each of these functions is then broken down into further divisions until many costs can be segregated directly at incurrence. Costs which cannot be apportioned directly must then be spread on the basis which is assumed to reflect most clearly the benefit derived from them by the various functions.[10] Classification of costs by functions does not, in itself, provide a measure of efficiency nor exert control over costs. However, it is a useful first step in that direction. The comparison of actual costs incurred to perform a function with the costs which should have been required does provide such a measure. Comparison is facilitated when costs are classified by function rather than simply by the nature of the expense, such as rent, wages, etc.[11] But the functional method is a broad one. Its utility depends upon the com-

[7] W. A. Paton and A. C. Littleton, *Introduction to Corporate Accounting Standards*, American Accounting Association, Chicago, 1940, p. 119.
[8] C. Rufus Rorem, "Differential Costs," *The Accounting Review*, December, 1928, p. 341.
[9] James W. Culliton, *op. cit.*, pp. 79-82.
[10] Paul G. Brown, "Analysis and Control of Distribution Costs," *The Journal of Accountancy*, September, 1948, p. 237.
[11] Donald R. Longman, *Distribution Cost Analysis*, Harper and Brothers Company, New York, 1941, p. 46.

plexity of the process of distribution required. If many products are involved and the marketing effort is great, the functional method of analysis may not be sufficiently specific to provide adequate control.

To provide the more specific information needed for effective cost control, distribution costs can be broken down into still finer classifications. The combination of direct and indirect allocation again is used to divide functionalized costs according to any of a number of unit bases. Some of these bases are: the commodity sold, the type of customer, the channel of distribution, and the territorial or organizational divisions. This type of classification provides a much closer measure of efficiency and technique of control. For example, the actual cost of a specific channel of distribution in selling a given quantity of product A to small customers in territory 2 is much more significant for purposes of control than is the total cost of distribution. The methods of indirect allocation used to spread the functionalized costs to these unit-bases are highly important. They will vary according to the particular cost under consideration and the unit-base to which applied. But the utility of the resulting information is a function of their validity in managerial decision-making and pricing. The problem is not a simple one and, as with indirect production costs, it is probably most satisfactorily solved when attacked on an individual-firm basis.

NEED FOR STANDARDS

When this sort of analysis is correlated with the study of sales potentials and actual sales results, it can reveal misdirected sales effort and costs which are not justified by results. This information is the foundation of distribution cost control but, in and of itself, it is not enough. The proper direction of sales effort does not insure the optimum result. Even profitability is not conclusive evidence of efficiency.[12] The efficient firm may be unprofitable while the inefficient may prosper for a time. Not only what has happened but also what should have happened must be known for the proper measurement of performance. The decision as to what should have happened can be expressed in budget form or through the use of distribution cost standards. The fact that criteria of satisfactory performance are needed is undeniable. The chief arguments against standard distribution costs hinge on the difficulty of their determination and their resulting validity once determined. These arguments probably can never be resolved in general, but must be decided on the basis of particular cases. In support of standard distribution costs is the strong point of need for a basis of comparison. Another interesting brief can be made for distribution cost standards based on the use which can be made of them to resolve the cost or expense question connected with distribution expenditures.[13] To determine the gross profit on sales, the cost of goods sold is deducted from total sales. This cost of goods sold figure is supposedly a true cost since it includes not only direct costs but also allocated indirect costs. In the case of deductions from gross profit to arrive at net profit, it may be held that there is no relation between the amounts deducted and the actual sales. The selling, financial and administrative costs used represent all expenditures of this type made during the period even though it is apparent that some such costs could have had no relation to sales booked during the period. The accountant is likely to rationalize to the effect that actual expenditures alone are reliable as a measure of such costs. At the same time, he will argue forcefully that the cost

[12] J. Brooks Heckert, *op. cit.*, p. 208.

[13] William B. Castenholz, *The Control of Distribution Costs and Sales*, Harper and Brothers Company, New York, 1930, pp. 151-161.

of sales figure is a true one though it is likely entirely divorced from the actual production expenditures of the period. The use of distribution cost standards to overcome this conflict in treatment can be illustrated by a simplified profit and loss statement. A standard rate of 25¢ per dollar of sales is assumed.

	Usual Method	Using Standard Distribution Cost
Sales	$100,000.00	$100,000.00
Deduct—Cost of Goods Sold	60,000.00	60,000.00
Gross Profit	$ 40,000.00	$ 40,000.00
Deduct—Selling and Administrative Expense (Actual)	35,000.00	
Standard Distribution Costs		25,000.00
Net Profit	$ 5,000.00	$ 15,000.00

Obviously, some disposition must be made of the $10,000 difference between actual and standard distribution costs. If this difference represents avoidable error, it should be written off as a business loss. If, when added to the standard cost figure, it presents a more accurate picture of normal distribution expense it should be so treated. But if it represents expenditures made in the ordinary course of operations to stimulate distribution in succeeding periods, it should remain on the books as a deferred item.

CONCLUSION

It must be admitted that, where distribution costs are regularly recurring in similar amounts, no great distortion to results is created by handling them as period cost. However, a similar statement could be made with regard to production costs which would obviate the need for inventory accounting. The period cost concept would not be widely accepted for the reason that the methods of handling indirect production costs are well established on a unit of product basis while a widely accepted technique for deferring distribution costs has not been devised. Most accountants would agree that if it is possible to determine the period actually benefited by selling effort it is logical to treat distribution costs as prepaid expenses, but the accountant usually feels that the relation to future periods is not sufficiently definite and clear.[14] It should be the task of cost accountants to develop means whereby such relationships can be determined at least as definitely as in regard to production costs. This task can be restated as the elimination of the distinction in treatment between product costs and expenses or period costs. The truly significant relationship is the one existing between justifiable expenditures which produce revenue and the revenue produced. Costs of revenue, rather than costs of goods and cost of being in business, attain the position of prime importance when the artificial barrier of the accounting period is removed. It is the third step in the cost accountant's activity, the matching of costs to revenue, which is the ultimate goal. The first two steps, the recording of costs and tracing of cost conversions within the firm, are only instrumental to it.

[14] Howard C. Greer, "The Technique of Distribution Cost Accounting," *The Accounting Review*, June, 1931, p. 136.

The Economic SCENE . . .

by W. Allan Beckett

THE OUTLOOK FOR CANADIAN EXPORTS

CANADIAN sales abroad got away to a fast start in 1960, but the latest month or two have been disappointing.

From about the middle of 1956 to the middle of 1959 Canadian exports levels remained virtually flat. In the third quarter of 1959, however, a substantial upward trend began. This proceeded, at the rate of a 5% increase, seasonally adjusted, in each successive quarter—third quarter 1959, $5040 millions; fourth quarter, $5320 millions; and first quarter 1960, $5600 millions.

Such a rate of increase could not be sustained indefinitely and the export trade returns for March and April suggest that the upward movement may already have halted. The seasonally adjusted monthly returns for domestic exports in the period January to April 1960 were $478 millions, $496 millions, $427 millions and $416 millions. Nevertheless, exports so far this year are still 14% over the 1959 period and stand, seasonally adjusted, at the record level of $5450 millions for the four months.

Although some special factors, particularly the industrial disputes in the nickel, copper and newsprint industries in late 1958 and early 1959 and some lag effects of the United States steel strike in early 1960, undoubtedly contributed to this increase it is evident that a much stronger demand was present in foreign markets for Canadian exports than in the first part of 1959.

A geographical analysis of the growth in exports is illuminating. On a year-to-year basis there was much more strength in non-United States markets. Sales to the United States over the four month period rose by 10%, but American participation in overall exports fell from 63 to 60%. Exports to the United Kingdom and Commonwealth rose by over 20% and to other countries, chiefly Western Europe and Japan by 22%. This is a reflection of the greater economic strength and rate of growth which currently exists outside the North American continent than within the United States and Canada. This fairly emphatic change in the geographical distribution of Canadian exports may be expected to continue during 1960.

About this time last year export patterns were distorted by the effects of the United States steel strike. Sales to the United States in the middle of the year were stimulated by buying in anticipation of the strike and afterwards were depressed when the strike became active. In June of 1959 exports rose to a record high of well over $500 millions.

It seems likely, therefore, on the returns for April, which showed a decline of 8% from the year ago figure, that the second quarter level for 1960 may be below that of the previous year. It is probable that the seasonally adjusted annual rate for the first half of 1960, may well lie in the region of the last quarter of 1959—about $5300 millions, once more establishing a plateau in export levels.

The growing evidence suggesting a downturn in the United States economic activity at some time in the remaining months of 1960 naturally foreshadows a likelihood of little, if any, further increase in the last six months of the year in sales to

the United States. As already mentioned, however, the steel strike limited exports during this period last year and it will not be until the closing months that comparisons will become valid. April returns indicate a levelling out in sales of lumber, woodpulp, newsprint and nickel, and declines in wheat grain, aluminum and uranium ores. Because of the different incidence of Easter this year, the working day loss may go some way to explain the weakness in April exports—on a year-to-year comparison, the March-April 1960 sales were actually still above those of 1959 by 3%. This is, however, a good deal less than the 23% increase registered in the first quarter of the year.

A further factor in the April weakening was the delay in the opening of the Seaway.

It is still probable that in whatever way the current hesitations in United States economic activity are resolved, that the calendar year value of Canadian exports in 1960 will be an all-time record.

The greatest year-to-year increase on the other hand has almost certainly been achieved already and the relative strength of exports compared to the other sectors of Canadian economic activity may begin to show a weakening trend in the balance of the calendar year. If this appraisal is accurate, official forecasts of a 6% increase in Gross National Production for 1960 may not be fully realized. A more encouraging aspect of the export outlook is that exports over the year are likely to show greater strength than imports and in consequence there will be a considerable improvement over last year's merchandise trade deficit. This may even be sufficient to offset the certain increase in the deficit on non-merchandise international transactions and result in a lower current account balance of international payments deficit in 1960.

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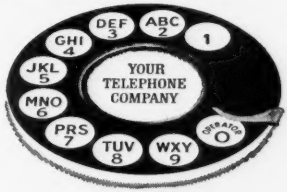

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TOPICAL

comments

LOOKING AHEAD

A shortage of helium, one of the rarest and most valuable of natural resources, is predicted for the U.S. unless a large-scale conservation program is soon undertaken. Because of its many unique physical properties, helium is excellent for use in nuclear reactors, ballistic missiles, high quality arc-welding, high altitude balloons, and many other purposes. As a valuable military, industrial, medical and basic research tool, helium is being depleted as rapidly as the natural gas supplies that contain it, while an estimated four billion cubic feet of helium is lost annually in natural gas consumed as fuel. *(M.S.U. News Services)*

Color TV programming will be expanded next season from the current 800 hours to about 1,000 hours, constituting from 15 to 20% of the total network time of the leading color network. *(Bus. Week, June 4/60)*

30,000 to 40,000 prospective new buyers will be scanning the boat market this year, joining the one out of 17 Canadians who already owns a boat. Trends show they will be looking for longer and roomier boats incorporating high quality, style and increased safety features. *(Can. Bus., June /60)*

Labor forecast for the '60s sees many important changes taking place in the U.S. labor force. Among predictions:

- A 15% increase in population will absorb the production of a swelling labor force, expected to increase 20% in the next decade.
- Womanpower will be up 25% to constitute a full third of the new working force.
- The over-45 age group will increase 20% and two out of every five workers will be in this category.
- Younger workers will be in plentiful supply (a 46% increase in the under-25 age group and a 12% increase in the 25-34 year group is forecast), many of whom will be included in the 10% rise in educated workers.
- However, the 35-44 year group, including many supervisors and highly-skilled men, will decline by 1%.
- Part time workers will increase 30%. *(Factory, June /60)*

ON THE PERSONAL SIDE

Inflation and taxes continue to swallow a large portion of the breadwinner's income. The man who made $5,000 a year in 1939 must make over $12,000 today to net the same amount. In 1939, the $5,000-a-year man with two children had $4,941

left after taxes. To equal this purchasing power, his counter-part of 1960 must earn $12,307 a year, of which $5,489 is forfeited to inflation and $1,877 to taxes.

Other 1939 incomes and their present-day equivalents include: $3,000 in 1939—$7,155 today; $1,500 in 1939—$3,323 today; $10,000 in 1939—$26,030 today. *(Office Admin., May/60)*

What's in a name? Increasing recognition of the over-all finance function is seen in a recent survey of corporate titles made by the Controllers Institute of America. Of 4,698 active members, 2,182 have the title of "controller", alone or combined with other titles; 672 have the title "treasurer"; and 506 have the title "vice president."

Where no title "vice president—finance" was shown in 1950, 74 held that title in 1956, and 187 hold it today. *(Cont., June/60)*

Overweight, associated with susceptibility to arteriosclerosis, hypertension, and diabetes, plagues the American population to the tune of 750 million excess pounds according to insurance studies. One out of every five men is at least 10% above average weight and more than one in 20 is at least 20% above average. For women the corresponding proportions are somewhat higher. *(Management Rev., May/60)*

OF GENERAL INTEREST

The World Bank, established in 1944 to provide capital for underdeveloped nations, has made loans totalling over $4.6 billion since its inception. Breakdown of the loan distribution by area is: Africa, $589 million; Asia, just over $1.4 billion; Australia, $317 million; Europe, almost $1.4 billion; Latin America, $981 million. *(Management Rev., May/60)*

Canadian automobile dealers chalked up more new passenger car sales in the first quarter of this year than ever before. Sales of Canadian-produced cars were down slightly from the same period in 1959, however, since British and European imports increased their share of the total market to 23.3% from 19.6% in the first quarter of last year. *(Fin. Post, May 14/60)*

Nearly 30% of the heads of "normal" Canadian families in 1959—families with both husband and wife living at home—were under 35 years of age; 26% were between 35 and 44 years; 34.1% were between 45 and 64 years; and 11.0% were over 65 years of age. *(DBS, May 27/60)*

The Canadian manufacturing sales dollar, according to a CMA survey of 1,043 major companies, broke down like this in 1959: *(Industry, June/60)*

Materials	46.2 cents
Wages and Salaries	21.9 cents
Power, water, local taxes, maintenance, repairs, charitable donations	13.4 cents
Dominion and provincial income taxes	4.2 cents
Excise and sales taxes	3.9 cents
Depreciation of assets	3.6 cents
Employee benefits	1.7 cents
Profits	5.1 cents

THE ACCOUNTANT'S CONTROL OVER ELECTRONIC COMPUTER SYSTEMS

By S. W. Skipworth,
Management Consultant,
Alexander Grant & Company,
Los Angeles, California.

Many accountants have been concerned with establishing control over the data processing medium. This paper outlines the essentials of instituting a computer control program suitable for both the internal and independent auditor and accountant based on the common meeting ground of fundamental auditing and accounting principles.

THROUGHOUT the accounting profession's growth, the accountant has had control over data processing through his personnel and machines. The accountant has earned a key position in the business enterprise. There are many reasons for the profession's present stature; and the accountant's control over accuracy and adequacy of data processing is not the least of these.

With the advent of electronic computers, many accountants have worried as to their future position and as to gaining control over this data processing medium.

This paper presents an approach to retaining all that has been gained, and further increasing the stature of the profession.

Electronic computers and electronic data processing have changed the modes and mechanics of accounting and auditing but they have not changed the basic principles upon which these professions are founded.

In analyzing these changes, we must be cognizant of the viewpoints of the internal auditor and accountant, as well as the independent public accountant. The internal auditor or accountant is concerned with internal control to a deeper level of clerical production than is the independent accountant. His concern is also greater in the field of procedure development, and he is allotted more time for such studies and for a more detailed audit than is his independent counterpart. On the other hand, the independent accountant is more concerned with financial position and other matters that the company man considers a part of the function of the controller, treasurer, and other managerial positions.

They have a common meeting ground in the mechanics and principles of accounting and auditing; they diverge in ultimate emphasis, the depth of the detailed portion of an audit, and in those special operating analyses that are specifically required of the internal auditor.

This paper will concentrate on those common meeting grounds.

We must concern ourselves with the following major points which will form the outline for this paper:

Prior to joining the Management Services Department of Alexander Grant & Company, Certified Public Accountants, the author was Regional Training Director—Univac Electronic Computers, Sperry-Rand Corporation. He has also designed both accounting and operating systems and served as Audit Director and Senior Internal Auditor for a number of large corporations. An Associate Director of the Los Angeles Chapter of the National Association of Accountants, Mr. Skipworth has been a speaker for the N.A.A. and other associations, as well as guest lecturer at several colleges.

THE ACCOUNTANT'S VOICE IN ORIGINATING THE SYSTEM.
PREREQUISITES FOR THE ACCOUNTANT'S STUDY OF ELECTRONIC COMPUTERS.
AUTONOMY OR SUBJUGATION OF THE DATA PROCESSING DEPARTMENT.
SPECIAL CONSIDERATIONS FOR EDP INTERNAL CONTROLS.
THE AUDIT PROGRAM.
USING A COMPUTER TO AUDIT A COMPUTER.

In discussing any of these points, it is important that there be no misunderstanding about the term EDP (Electronic Data Processing), as opposed to IDP (Integrated Data Processing), or IEDP (Integrated Electronic Data Processing). There has been a regrettable tendency on the part of some accountants to use erroneously any of these terms interchangeably. When the term "EDP" is used in this paper, it means strictly "Electronic Data Processing" and that may or may not be integrated.

THE ACCOUNTANT'S VOICE IN ORIGINATING THE SYSTEM

When the programmer writes the step-by-step program that will actuate the computer, he will do so from a flowchart. This flowchart will outline the data-handling steps and the internal check-points, self-balancing points, and printouts for data volume and dollar amount balancing.

These balancing points will not be, or at least should not be, left to the arbitrary discretion of the individual programmer. All of the programmers of an installation should follow a pattern that will fulfill the following requirements:

1. The efficient programmer's desire to produce programs that are economical of computer running time.
2. EDP management's desire to maintain a constant or running balance condition; making each run self-balancing or immediately balanceable, and localizing the differences to reduce extent of computer reruns.
3. The accountant's desire for adequate internal control.
4. The auditor's desire for adequate internal control, and for a clear audit trail.

This pattern is established by the "Rules for Programmers", "Programming Conventions", "Programmer's Manual", or any other name you may be familiar with.

The programmer's manual defines and standardizes such matters as tape labelling, balancing of input data to output, establishing departmental lines, checkpoints, printouts, and control over exceptions, rather than leaving such standards to vary from run to run according to which programmer wrote the program.

It is not only essential, it is almost mandatory, that the accountant have his voice in establishing these rules. Few people can surpass him in his knowledge of necessary controls. He will expedite, not slow down, the project by helping to formulate the programmer's manual.

1. He can inform the manual committee of his requirements and save their research time.
2. His familiarity with the establishing of control points will be of assistance to those who are just beginning in electronic data processing.
3. By the nature of his past work on those very same data that EDP seeks to process, he is probably far more familiar with the data structure than the potential programmers who are on the manual committee.

It is, of course, possible to audit without so having that initial voice; but both the auditor and the EDP installation are in for far more work.

We must recognize the fact that electronic computers have created the professional programmer. Many very fine and intelligent people have chosen the profession, but we must never lose sight of the fact that many programmers do not have academic training in accounting or business administration.

PREREQUISITES FOR THE ACCOUNTANT'S STUDY OF ELECTRONIC COMPUTERS

It cannot be emphasized too strongly that the accountant does not require electronic knowledge nor a study of higher mathematics to understand and program electronic computers. There are but two prerequisites:

1. The ability to think logically.
2. A knowledge of the data-processing function which it is desired to program.

Electronic computer instructors can teach the computer's functions and operations without resort to electronics or higher mathematics. The accountant then applies the computer to his own problem. Accountants would apply computers to accounting and related data processing. Mathematicians would apply the exact same computer knowledge to the solution of mathematical problems. Accountants, mathematicians, engineers, and statisticians all take the same basic computer programming course. That basic course is applicable to the problems of each. Advanced programming courses, peculiar to the problems of a certain profession, are only advanced as to individual application and not to actual electronic computer knowledge.

Probably the greatest deterrent to some students of electronic computers is lack of training toward the ability to think logically. Electronic computer programming positively demands the fine art of precision thinking. It will tolerate no other.

Having met the above standards, one is only limited by the degree of his inventiveness. Inventiveness is an absolute prerequisite for the programmer who desires to produce the type of work referred to as "sophisticated."

AUTONOMY OR SUBJUGATION OF THE DATA PROCESSING DEPARTMENT

To achieve adequate internal accounting control, one should give serious consideration to the status of the electronic data processing department in the over-all company structure. He should satisfy himself as to whether it is an autonomous entity or a subjugated sub-department. Sub-departments are subject to the rulings of others. A radical example of this would be where the computer department answered to the paymaster's department.

The degree of independence of the data processing department becomes an important criterion as to whether the auditor or the accountant considers its internal control to be tamperproof, and how great he considers the possibility of collusion.

I share the opinion of many others that the EDP department should be an independent entity, and that its head should answer as high in the corporate structure as is feasible based upon the type of data processed. This makes for uniform internal control and programming efficiencies in the activities of all departments served by EDP.

SPECIAL CONSIDERATIONS FOR EDP INTERNAL CONTROL

1. EDP does not, as a general rule, originate data. Normally, EDP merely pro-

cesses data that have been originated outside the EDP department and (if internal controls are adequate) have been controlled to the EDP department.

Where, however, the EDP department both originates and processes data, added precautions must be taken for internal control.

2. The novelty, and supposed complexity, of EDP might cause one to become so engrossed in the processing of a vendor's invoice or a time card that he would overlook the possibility of the item actually being a dummy transaction. The accountant must be on guard against becoming so engrossed in the computer run details that he overlooks the normal requirements of internal control.

3. Equal weight of consideration must be given to the peripheral equipment controls as is given to those of the electronic computer. This is discussed in the section headed "THE AUDIT PROGRAM."

4. EDP practices are tending to blur and obscure former sharply-defined departmental lines. Many accountants are familiar with the one-sided journal entry system found in some sizable corporations. It is nothing more than an expansion upon the "transaction journal" (i.e., SALES) which we all learned in our first college year. In some large corporations, one department builds up the credit entries to inventory, another builds nothing but deposits to cash, and another may build nothing but debits to the inventory. After each has had its contra amount posted to a clearance account, the net result of all the departments' work is nothing more than a compound journal entry, even though each of the "one-sided" journal entries was posted separately to the general ledger.

EDP, using the large memory and other storage possibilities of modern electronic computers, often handles more than one department's work in a single computer run. For example, a sale is simultaneously an increase to the sales account, a charge to receivables, a reduction of the inventory, an increase to cost of sales; the inventory is minimum-checked and any necessary purchase orders are electronically prepared, and the shipping copies and invoices also come from the same run. The accountant need only view such a transaction, repeated perhaps thousands of times daily, as one of a series of compound journal entries.

5. There is an old saying to the effect that one doesn't design an accounting system just to make it easier for the auditor. EDP has, to a great extent, changed that. The self-balancing features built into most good programs provide more of an audit trail, insofar as balancing of run sections is concerned, than the auditor has been used to finding.

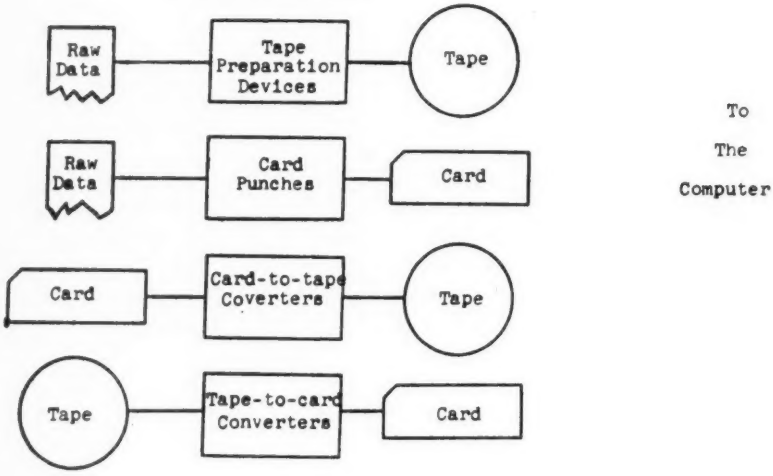
6. Many of the old-line audit guideposts do still exist. For example, analysis of expense and revenue trends and ratios will still be used to segregate those functions and accounting periods that require detailed study. The man count control is still of the same importance to verify the actual existence of employees. It is still possible to pay personally chosen segments of the employees. Verification of physical inventories and their subsequent computations has lost none of its necessity.

THE AUDIT PROGRAM

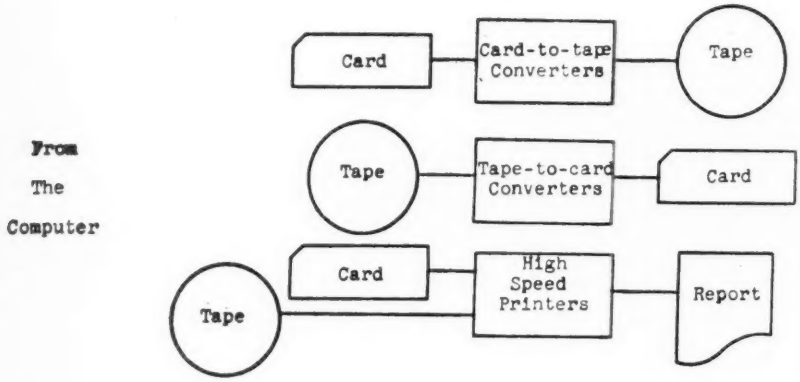
No single phase of the audit program is more important than the auditor's evaluation of the adequacy of the internal accounting controls. With the advent of EDP, this evaluation retains its same degree of importance.

EXAMPLES OF OFF-LINE, OR PERIPHERAL EQUIPMENT

INPUT PREPARATION



OUTPUT



With EDP, the control problem divides into three parts.

1. Control outside the computer runs
2. Control within the computer runs
3. Reliability of the computer used in the installation

The scope of an EDP audit now begins to form a pattern. Bear in mind, in reviewing this pattern, that the usual audit program (Cash, Accounts Receivable, etc., following the chart of accounts) still exists. We are now concerned with the pattern of the mechanics to audit an EDP installation, regardless of which general ledger account or trial balance section is under scrutiny.

This pattern for the scope of an EDP audit assumes a form similar to that outlined below, and the balance of this section will follow that outline.

1. Control outside the computer runs
   - A. Computer input
     - a. Validity, quantity, and amount of raw data
     - b. Preparation of the computer input medium*
   - B. Computer output
     - a. Directly readable computer printed output
     - b. Tape or card output for further processing*
2. Control within the computer runs
   - A. Block diagrams or general procedure flowcharts
     - (1) Trace the required internal controls from the programmer's manual into the flowcharts (this is also the place to learn the overall data flow of the entire installation).
     - (2) Determine that the program will handle properly both the good data and the exceptions.
   - B. Trace the block diagrams to the final, or computer logic flowcharts. (These are the detailed flowcharts of each individual run from which the actual program is coded.)
   - C. Trace the final flowcharts to the actual coded program.
   - D. Test the data, the master files, the results, and the program itself.
3. Computer reliability

Control outside the computer runs involves the inputs to the computer and the outputs from the computer. While EDP is rapidly changing accounting's concept of necessary records, it hasn't yet made significant changes in the original media. It will, though, since some electronics men are forecasting the day when recording the transaction initially will feed it directly into the maw of the computer. When such transactions as an employee punching a timeclock, or the ringing of a sale, are fed directly from the recording device into the computer, the auditor will undoubtedly insist on some type of simultaneous recording for purposes of internal control. It is immaterial whether this be in printed form, on punched cards, or on punched or magnetic tape for possible later transcription.

Except for a discussion of input data preparation and verification, there is little in the study of input that is new to the accountant. This paper assumes that the reader is familiar with the principles of accounting and auditing, and that it is un-

*It is at these two points that the auditor must concern himself with the peripheral equipment.

necessary to give examples of internal accounting control, such as signature authorizations, lack of single party control over a complete transaction, and that each successive handling of a document shall provide check and verification over what has gone before.

Proving the accuracy of input data preparation is, in reality, no different than proving the accuracy of record preparation in any audits prior to the inception of EDP. One must start with the media covering the transactions, satisfy one's self as to the validity and accuracy of that media, and then be sure it has been transcribed correctly to the input medium of the electronic computer under audit. There is nothing mysterious about this, and there are no new audit principles involved.

Insofar as EDP is concerned, the most important factor to consider is the means of input verification used by the EDP installation.

1. Originally prepared and then put through a verifier; which requires duplicate manual typing or keypunching, and which will lock up if any differences are detected.
2. Complete preparation of duplicate input medium, later "proofread" by the computer.
3. A "hard" copy prepared simultaneously with the computer input medium, and later manually proofread.
4. The input medium of one computer run is an output of another.
5. The punched card output of a tabulating installation is used intact as the input to the computer, or is sorted since its last tabulating proof and then used or is transcribed by a card to tape converter.

If no verification is used, one must be sure that it is really required. Quite often it costs more to control a function than the error or misuse of funds could reasonably amount to. Internal control merely for internal control's sake is one of the marks of antiquity in systems design.

When auditing computer output, the auditor is primarily more concerned with that output to be transcribed by peripheral equipment than he is with output directly printed by the computer. If the program is correct, if there has been no computer malfunction, and if there has been no operator intervention, then he is quite sure of directly printed output. However, when computer language output goes to the peripheral equipment for transcription, revision, or deletion of items, the auditor must concern himself with the adequacy of internal control in the non-computer functions such as high speed printers, tape to card convertors, card to tape convertors, magnetic tape to punched tape convertors, punched tape to magnetic tape convertors, long-lines magnetic tape to magnetic tape copiers, and many more too numerous for this paper.

The accountant must determine to what extent this equipment is self-checking, to what extent the programming or wiring can be used to inject fraud, and to what extent operator intervention can inject accidental or deliberate data manipulation. He must satisfy himself about the adequacy of such controls as man counts, check numbers, voucher numbers, and the manual balancing of peripheral output against a computer printout of a control total controlling the output tape or cards. There is little to deter the auditor from rerunning any data tape he is suspicious of, providing such has not been "erased."

Within the computer runs, once the auditor has satisfied himself about the adequacy of requirements in the programmer's manual, he is ready to trace the application of these requirements into the various programs. At this point, I seriously recommend working in close conjunction with the chief programmer.

In the review of the block design, or over-all general process flowcharts, the auditor can not only trace the application of the programmer's manual requirements but he can also gain a broad perspective of the entire system. Here he can see the tie-in of the various runs, and the flow of data.

Next, he would trace these general process flowcharts to the individual computer run flowcharts, drawn up in the logic form of the particular electronic computer involved. Here, in addition to the chief programmer, the auditor should call in the programmer who actually did the work.

The final step of this program tracing is examination of the actual program which is used to actuate the electronic computer. Here, the auditor must proceed very cautiously because quite often the program will not follow the flowchart exactly and rarely will the flowchart have been changed to agree with the program. Once again, work with the chief programmer and the programmer.

In reviewing the flowcharts and programs, the auditor is looking for the following:

1. Block count and item or record controls. The balancing of input data to output to be sure that all data have been handled. The "Block", to the programmer, is a grouping of items which corresponds to the batch with which the accountant is familiar.
2. Item sequence testing. This can take the form of pure sequence test, either ascending or descending, and it also might include continuity testing for absence of data.
3. Input and output tape label checking. In multi-tape files, it is often the practice to write the tape label and sequence number (in computer language) on the beginning of the tape. The program then checks to make sure the operator has put the right tape on the right servo (tape-handling mechanism). This is also done on single tape files except that the tape serial number is unnecessary.
4. *Will the program handle both the good data and the exceptions?* EDP is, to a marked degree, based upon accounting by exception. It is common in EDP for the program to let all transactions of a normal nature merely remain in computer language form on tapes or cards, and to print out the exceptions. However, several problems face the programmer. Were he to handle all exceptions by the program, it generally becomes too unwieldy and time consuming. Also, exceptions often require manual review. Conversely, where exceptions are rejected by the computer and printed out, the possibility arises of their never re-entering the system and thus being lost. Rejected exceptions must be properly controlled and their re-entry to the accounting records assured.

One important method of assuring that a program is adequate is to devise a dummy list of every possible type of transaction, transcribe those transactions to the input medium of the computer, and test the program thereby.

Computer reliability must be given due consideration because failure of critical components could have caused reruns. Reruns are generally not run as normal procedures and the operator intervention could have caused errors. There are pro-

cedures known as automatic reruns, where the program has built-in steps to handle reruns due to errors. Here the auditor has a more reasonable degree of reassurance.

It would behoove the auditor to review the computer log book as to what degree and variety of troubles the installation had during the period under audit. If the auditor isn't sure of the error possibility arising from any type of malfunction, it would be entirely in order for him to discuss the matter with engineers from the factory or from the manufacturer's maintenance department. Particular concern should be given to the built-in, self-checking functions of the computer. The auditor must assure himself that computer-introduced errors are computer-detected.

USING A COMPUTER TO AUDIT A COMPUTER

Can a computer audit a computer? Yes, but don't expect it to think. Electronic computers are the world's fastest and most accurate slaves, but they have no ability to think as we define it.

The computer can do a great deal of the routine scanning, proofing of account balances and selecting items for further investigation based upon variance from norms and min/maxs previously established by the auditor.

The industrial engineering profession has achieved considerable success in the field of statistical quality control. Much of this stems from tables based upon the binomial probability function. This substitution of the exacting numerics of probability computation for the human decision of an inspector has many adherents in the field of auditing. By the use of min/max tests, mathematical determination of test volumes against given data populations, and storage of known abnormalities as constants, the computer can be programmed to relieve the auditor of much of the drudgery in making an audit.

There are three factors to be considered when using the computer in this fashion:

1. Can you logically determine values against which the computer can compare for equality or magnitude?
2. Can you foresee *all* of the abnormalities for which you are auditing and insert them into the computer as constants, or computer test for them in some other manner?
3. Is the volume of data great enough to warrant use of the computer in this manner?

This field of using a computer to audit a computer is almost untouched, virgin territory.

Fascinating thought, isn't it?

For further reading

THE ACCOUNTANT AND THE ELECTRONIC SCIENTIFIC COMPUTERS, by Wm. G. Britt, Cost and Management, Jan. 1960.

COST ACCOUNTING AND COMPUTERS, by Maurice S. Newman, The Controller, May 1958.

HOW WE APPROACHED AND ARE APPLYING ELECTRONIC ACCOUNTING MACHINES, by Flood, Starr, Buchheit and Broughton, N.A.A. Bulletin, May, 1958.

ELECTRONICS: THE IMPACT ON ACCOUNTING, by Edgar F. Codd, Cost and Management, May, 1955.

The Editor's Choice

LOOKING TOWARD A THEORY OF INDUSTRIAL MANAGEMENT
By W. V. Owen, Advanced Management, March 1960.

The author picks eight functions of management and plots the inter-relationships of each to the other. Because these factors seem basic to all management and the exercise of them follows a pattern, Mr. Owen suggests that this is the basis for a theory which would read: "Industrial management is primarily a complex of economic adjustment decisions carried on in a total environment energized by creativity, free entry and freedom of choice through an exchange mechanism with economy as the objective." One may question the choice of the eight "basic" functions (the choice of names is not very descriptive of the function) and the cause and effect relationship. However, the article illustrates some good thinking on the "what" of industrial management rather than the "how."

PLANNING FOR GROWTH
By J. T. McCay, The Canadian Chartered Accountant, April 1960.

In this brief article, the author of "The Management of Time" puts forth some provocative observations. Mr. McCay states that unless we solve the problem of "how can we increase our rate of learning . . . we face the early prospect of becoming strangers in an alien world." He goes on to suggest ways in which favorable conditions may be created for the purpose of increasing the speed of learning.

ASPECTS OF UTILITY ACCOUNTING
N.A.A. Bulletin, April 1960.

Three separate articles are developed by five participating authors. A very good case is given for the application of sound cost control principles to public utilities that usually operate under government.

THE FOLKLORE OF MANAGEMENT
By C. B. Randall, Dun's Review and Modern Industry—Series beginning Jan. 1960.

In this series, the distinguished author examines some of management's "sacred cows" and in an excellent style traces the origin and cause of these current misconceptions. He sums up his convictions in terse statements that read like proverbs: "If an executive is tongue-tied in public, it is because he is tongue-tied in private; he has nothing significant to say" . . . "No new marvel of technology can ever bestow conviction on a banal message from a man who believes in nothing" . . . "Far better to build on a man of lesser talent with sound instinct for team play, than to hope for change in an incorrigible star perfomer."

DIRECT COSTS ARE BETTER FOR PRICING
By W. Wright, N.A.A. Bulletin, April 1960.

The author refers to the *N.A.A. Research Series No. 23,* wherein it is stated that one of the disadvantages of direct costing is its failure to provide total cost for pricing purposes. He goes on to outline newer developments in this costing technique, and illustrates practical application of the method to several pricing situations.

Books in Review...

ACCOUNTING—A MANAGEMENT APPROACH, Revised Edition
By Hill and Gordon, Richard D. Irwin, Inc., Homewood, Illinois, pp. 543. $8.40.
Reviewed by C. I. Taylor, R.I.A.

At first glance, it would appear an almost impossible task to put into one volume of 500 pages a complete course in accounting, from an explanation of debit and credit and double entry bookkeeping, to measurement of capital and income—as well as a course in industrial and cost accounting and budgeting.

Yet, this is what the authors have accomplished in a very able manner. If there is one criticism, it is that there has been an attempt to cover too much ground in one volume. Even though the book has been written for the "businessman" rather than the accounting student, the authors have gone to great lengths to include very lengthy questions and problems at the end of each chapter.

The section on measurement of capital and income is very well done, and even though related to U.S. taxation practices, would be of value to accountants in the corporate and public accounting fields.

The section dealing with cost accounting and standard costs is rather briefly dealt with, but is one of the most objective treatments of standard costs that I have seen. Direct costing is also dealt with rather briefly and with not too much enthusiam.

This volume, even with its rather brief treatment of some of the accounting techniques, is exceptionally well done in the light of what the authors set out to accomplish, which was to emphasize the "why" rather than the "how" of accounting—a valuable reference book.

Books Added to Library...

Title	*Author*	*Publisher*
Fundamental Accounting Theory and Practice (2nd Ed.)	Tunick and Saxe	Prentice-Hall, Inc.
Fundamentals of Business Mathematics	Knick	Richard D. Irwin, Inc.
Fundamentals of Communication —An Integrated Approach	Thompson	McGraw-Hill Book Company, Inc.
Handbook of Industrial Engineering and Management	Ireson and Grant	Prentice-Hall, Inc.
Handbook of Modern Accounting Theory	Edited by Morton Backer	Prentice-Hall, Inc.
How to Solve Introductory Accounting Problems	Hammond	Prentice-Hall, Inc.
Human Relations in Industry (3rd Ed.)	Gardner and Moore	Richard D. Irwin, Inc.
Internal Auditing for Management	Lamperti and Thurston	Prentice-Hall, Inc.

MANAGING A CONSTRUCTION CONTRACTING COMPANY*

CONCLUSION

By Thomas Kubicek,
Assistant Comptroller,
G. M. Gest Limited,
Montreal, Quebec.

In this final installment of a two-part article begun in the June issue, the author reviews the bases for determining the progress revenue in a construction company. He then goes on to outline investment policies and controls in the equipment division, programming of the garage control, and, finally, lists the financial and management reports used in the company.

SEVERAL methods may be used to determine the contract revenue in the construction industry. Basically, there are two simple accounting methods:

1. The cash method
2. The accrual method

The cash method takes income into account when it is received and costs when they are paid. A few small contractors may use this method; more often, however, we find a modified cash method wherein most income and expenses are determined on the basis of cash receipts and disbursements. Other items, such as insurance, taxes, etc., may be prepaid and only the "amortized" portion charged to cost. While this method may be economical for smaller contractors, it is inadequate for an average-sized contracting business.

The accrual method is the only acceptable method for a majority of construction businesses. Because it takes into account more of the known facts of the company's operations, it is the only method which provides management with usable data. This method matches current income with related costs, regardless of the actual receipts or disbursements. There are several modifications of the accrual method commonly followed by contractors, such as,

1. Percentage-of-completion method
2. Completed contract method
3. Mixed accrual method
4. Ordinary accrual method without modification, etc.

It is almost universal practice for contractors to receive progress payments as the work progresses. This explains how a one-million dollar contractor may build a $20 million structure. He is not expected to finance the entire cost, but must finance the entire cost between his expenditures and the progress payments. Considering the progress payments, there is often very little relation between the amounts billed to owners and the actual value of the work completed. Sometimes these payments are less than the cost incurred to give the owner protection against defaults. Some-

*Condensation of a thesis submitted for R.I.A. qualification.

The author is Assistant Comptroller in charge of planning, budgeting and supervision of financial statements of G. M. Gest Limited, a large construction company. Prior to joining this company, he held responsible accounting positions with various orgaizations, the most recent being Steinbergs' Limited. A Registered Member of the Society, Mr. Kubicek also holds B.A. and B. Com. degrees from Sir George Williams University and will be awarded his M.A. from the University of Montreal this year.

times the owner may provide the contractor with working capital by accepting progress billings in excess of the value of units completed. In the case of a lump sum contract, the billings are made on the basis of percentages of completion not always justified by the physical progress.

No problem seems to arise in connection with jobs requiring a short time for completion. Therefore, smaller contractors base their reports on the ordinary accrual method. In the case of contractors who have numerous jobs spread over a wide area and whose work consists of several types of contracts, such as cost plus fixed fee, lump sum or unit price, some of the work may justify the percentage-of-completion and some the completed contract method. Which method should they choose?

In the Canadian Construction Company, which belongs to this category, there is a policy that diversification should cause individual differences to average out so that the final result will be accurate regardless of the method chosen. As long as the records and financial statements reflect the facts and the method used, and as long as the "hybrid method" is followed consistently, there can be no reasonable objection to such a procedure.

A real problem may arise for contractors specializing in operations under a long term contract of the lump sum or unit type—that is, where the controversy "percentage-of-completion vs. completed contract method" arises. This dilemma is based on the fact that a particular job may continue over two or more accounting periods and it is necessary to determine in which period the income from the job should be taken into account. Operations of this size may involve many problems. The bonding capacity, credit considerations, and other management problems may call for a more or less uniform flow of income on the operating statement. Under such conditions, percentage-of-completion accounting becomes a virtual necessity. However, while the result of each contract can be determined fairly accurately with the completed contract method, subjective elements of judgment are always present in the percentage-of-completion method that are difficult to verify.

THE ESTIMATED COST PROFIT RATIO METHOD

Our company runs a variety of contracts at the same time. Most of the work may be classified as short term contracts. Some may, however, overlap from one accounting period to another. Most of the jobs are lump sum or unit contracts; some are variations of cost plus contracts. From the credit and managerial control viewpoints, it is vitally important that the monthly financial statements disclose the revenue on current work as accurately as possible. Through experience, we found that, in most cases, the progress billings did not form a sound basis for measuring profit because they often included portions of unearned profit. This procedure resulted in either overstatement or understatement of monthly or annual profits with the possibility that portions of unearned profit, taken into account, may never have been realized. Because of this wild fluctuation, the company's financial statements lost much of their meaning as indicators of earning power.

Our present calculations are based on a so-called CPR formula which takes into consideration the following three principal factors:

1. *The cost profit ratio*

The CPR assumes that original estimate was made with a view to a uniform profit percent on every part of it. It is based on the assumption that the contract is a unit.

Such reasoning may raise doubts about the consistency of the philosophy used in determining income according to the percentage-of-completion method. However, this objection is insignificant. More serious is the fact that the CPR may give consideration to deviations of incurred costs from the original estimates. This disadvantage may be overcome by taking into consideration a second factor.

2. *The progress report based on the percentage of job completed*

This report, prepared by field engineering, computes the value of work actually completed by taking into consideration that portion of the total contract price which would correspond to the percentage of work done. The best procedure is to project the job's progress in terms of percentages of completion. This curve, which usually takes the form of an "S", is based on estimates of costs as they are incurred and not upon the cash expenditures.

3. *Monthly revised estimate report*

Every month, costs to complete are re-estimated and new total costs at completion established. Should this revised estimate indicate a loss at completion, a provision is made to absorb it gradually as it is being incurred.

Theoretically, any one of these three factors could be used to establish the current revenue. In practice, however, all three are highly subjective and difficult to verify, and so we have amalgamated them into one with the following necessary steps:

1. As soon as a contract is awarded, the accounting department receives a tender summary from the estimating department. From this, the CPR is computed as follows:

Contract #9216-1			
Total contract value			$36,000
Total direct variable cost			30,000
Margin			$ 6,000
	6,000		
CPR	30,000	20%	

2. This information is shown on a cost ledger card which is opened at this time.
3. At the close of each month, all costs are summarized and the revenue, based on the CPR, is computed by adding 100% to the CPR percentage for each particular job.
4. The actual revenue, based on the progress report, is received from the engineering department.
5. These two revenues are compared and the lower of the two is adopted in our computation of revenue earned.
6. Should the actual revenue be higher than the estimated revenue, the additional profit is taken into account only at the time it can be truly verified—at completion of the job.
7. Should the monthly revised estimate indicate a loss at completion, a percentage of such loss is prorated over all the remaining period until the time of completion.

The information in the above summary is readily available for each individual job in our cost ledger, which contains more detailed information about the elements of cost. At the end of each month, the individual cost cards are closed into the control card for each particular job. Thus the above summary is a by-product of our machine accounting. This procedure saves a great deal of manual copying and calculating. All that is needed to balance this statement is to enter the accrued revenue in order to arrive at the total revenue and then to compute the gross margin. The contract summary becomes the basis of our monthly financial statements and several other management reports, such as the marginal pick-up analysis, monthly revised estimate report, etc.

There are several worthwhile advantages in the use of the method described.

1. It provides the means of reporting income as it is earned, based upon the reported field activity.
2. It aids significantly in management financial planning.
3. It provides fairly consistent statistical data which can be used for comparative analyses without the distorting effects inherent in the completed contract method.
4. It enables us to give our reporting a label of adequacy, accuracy and timeliness.

EQUIPMENT DIVISION

The construction business today is not what is used to be, i.e., capitalizing on manual labor only. Heavy investment in present-day modern construction equipment is necessary to stay competitive, yet there is no other segment of the construction industry which is more neglected and so nebulously controlled.

A great many failures in contracting companies can be attributed to the absence of an effective control procedure over the capital tied up in fixed plant and equipment.

The continued expansion of the Canadian Construction Company made top management recognize that a special control program for the equipment section would be much cheaper in the long run than no control at all. As far as the long range planning and the return on investment in heavy equipment are concerned, two important factors are being stressed:

1. The construction management must be made aware of the high cost of fixed equipment and plant facilities.
2. Because of this high cost, they must know if they are spending enough for the plant or too much.

Thus any decision resulting from this information is either financial, strategic or operational.

RETURN ON INVESTMENT CONCEPT

The basic principle governing any outlay is that the original investment should be returned if the company is to continue in existence. A fairly common line of thinking among top management in regard to fixed assets is that one-half of the cost of a capital addition is recoverable from the government in the form of reduced income taxes after deduction of depreciation. Actually, the ratio of tax recoveries to original investment is much lower than the tax rate of 50%. If future receipts are discounted at 10%, the ratio would be only 33% and for lower depreciation rates the ratio may be even less. The above reasoning disregards the value of money. A capital investment problem usually is more complicated. Every investment in heavy machinery will be discounted over a period of several years. The expected operating results may vary from large losses to large profits. Nevertheless, the

principle of finding the rate of interest which discounts future operating results to a sum equal to the capital expenditure still applies.

To compete, contractors need new machines. They want to buy them but are handicapped. First, inflation slashed their working capital, then, along with a general rise in costs, the replacement price of equipment moved up and is likely to keep rising. What should they do so as not to endanger their general financial position? This problem seems to have created another concept—the "lease or buy decision." Leasing requires little or no down payment (as compared with the term financing). Thus the freed capital may be used to take on additional work or otherwise expand business. Performance and payment bonds are often limited by working capital and many insurers follow a rough rule of ten times working capital as a practical ceiling. Furthermore, many a contractor has found that it pays to rent when equipment is needed for a short period of time. Some lease when they want to try out and compare with the newest machines on the market before buying, usually with an option to purchase.

In addition to these financial and operations decisions which every construction management has to face, there is still another one—the strategic decision. When is the right time to replace a machine? The answer may hold an important key to construction profits and it can be approached scientifically. If a machine is kept operating too long, maintenance costs skyrocket. If it is discarded too soon, invested capital may be lost through excessive depreciation. The scientific approach to this problem was developed by the Fisher Contracting Co. of Phoenix Arizona.[1] This method is called the "metre method" and has four basic factors:

1. Repair—cost per hour
2. Productivity—cost per hour
3. Unavailability (lost time)—cost per hour
4. Capital decline—cost per hour

These factors do not all work the same way. Some of them work in opposite ways. Depreciation, which is heavy the first year, tends to level off as the machine gets older. Repair costs per hour are the reverse. It is necessary to work out the optimum point, getting the most earning power out of a machine before it costs too much in breakdown time and maintenance.

For this reason, it is necessary to establish a predicted time curve and gather the statistical data over a period of years. This can be facilitated by standardization of equipment units becuse it is hard to predict the performance of an untried piece of equipment. The manufacturer's or national records, should there be any, won't be of much help because changing business conditions, diversification of work and many other factors play an important part in establishing predictability curves. By systematic accumulation of historical and current statistical data, we can establish the productivity, unavailability and capital decline factors and thus arrive at the lowest average accumulative cost-point at which a machine should be replaced.

HISTORICAL VS. REPLACEMENT COST DEPRECIATION BASIS

Rising price levels, coupled with high tax rates, have caused executives, economists and accountants to become concerned with questions about the proper basis for depreciation accounting. Depreciation affects to a greater or lesses extent every enterprise in the national economy.

[1] *Construction Equipment*, March 1959, pp. 72-78.

The choice of methods has been limited generally to the:

1. Straight line method
2. The declining balance
3. Production—working hours method
4. The sum of the year's digits[2]
5. The replacement cost method
6. The sinking fund method[3]

The crux of the problem is which of these should be used for depreciation accounting in the construction industry.

Historical cost of depreciable assets is generally considered to be a deferred charge to be deducted from revenue during the useful life of the assets. It is a process of allocation and not of valuation. Against the concept, the argument is that depreciation charges should be adequate to permit the replacement of facilities based on new and significantly higher prices. Although professional accountants have recognized this problem as a serious one, they do not seem to agree on its scope and solution. Canadian and American income tax authorities favor the historical cost basis. However, it is interesting to note that

"The jurisdiction taken by the United States Supreme Court has presented a rather confusing picture. At various times and for different purposes, the Court has given the nod of approval to a replacement cost basis, reproduction cost basis, a historical cost basis, and a fair value basis, which is a combination of the other bases . . . "[4]

Several economists suggest that profits are overstated because of the inadequacy of the depreciation allowance, that irreparable damage may be done to the financial integrity of a company through subjecting profits to an unduly heavy profit squeeze.

Those who advocate retention of historical costs as the proper basis for depreciation accounting point out that adjustments in the books of accounts will result in confusion. They claim that objectivity, which is an essential of accounting, would suffer through the weaknesses of index numbers and the impossibility of determining the cost at which assets will be replaced.

It may very well be that any method evolved will have significant weaknesses, because of the basic fiction of the dollar as a stable unit of value. Nevertheless, it is evident that inflation is the core of the present depreciation dilemma in every industry. In the contracting business, this problem cannot be neglected. Because it is a fiercely competitive industry today, it requires exacting, modern business methods. Therefore, to avoid the dissipation of capital, supplementary data reflecting the effects of the fluctuation of price levels are needed. When developing equipment rental rates (whether for own or outside use), in addition to all known factors such as owner-

[2] Under this method, the depreciation rate is a fraction: the numerator is the remaining estimated useful-life of the asset at the beginning of each year. The denominator is the sum of the years of estimated useful-life at the time of acquisition: $\frac{N\ (N \text{ plus } 1)}{2}$

[3] The formula which gives the amount of year end deposits is as follows:

$$R = S\ \frac{i}{(1 \text{ plus } i)^{n-1}}$$

Where "R" is the amount needed in the fund at the end of the period of years, "i" the interest rate, "n" number of years of useful life of equipment. Tables are readily available which will give the value of

$$\frac{i}{(1 \text{ plus } i)^{n-1}}$$

[4] *N.A.A. Bulletin*, William C. Flewellen, "Historical vs. Current Cost as Depreciation Bases," p. 39, August 1958.

ship and maintenance costs, it is necessary to add a percentage for replacement of each particular unit. Only then can a contractor be sure of maintaining his plant at a high level of efficiency.

PROGRAMMING THE GARAGE CONTROL

To be able to determine the exact cost of owning and using equipment and to control its productivity, costing records must be kept for every unit of equipment.

In accounting for construction machinery, the following classification is used:

a) *Ownership costs*
   1. Depreciation
   2. Major repairs
   3. Sundry charges—taxes, licences, insurance, etc.

b) *Running (maintenance costs)*
   1. Fuel and lubrication
   2. Miscellaneous expenses: filters, cleaners, minor repairs done outside (often billed on credit cards)
   3. Tires and tubes

Other expenses, such as transportation, should be charged to each particular contract as its direct overhead expense.

BRINGING THE EQUIPMENT COST INTO COSTING SYSTEM

The following forms and reports are used to accumulate and channel the vital data to management for scrutiny:

1. *Garage work order*

All repairs in our garage are authorized by a garage foreman who issues a work order showing the nature of the job to be performed and an approximate time to do it. In the direct labor section of this form, every mechanic enters his time. The stockkeeper records the quantity and description of the parts issued in the direct materials section. In order to facilitate the pricing of such parts, the stockkeeper shows here also the number of the inventory issue slip. Thus the cost clerk may secure easily ready-priced issues from the inventory control section. Completed work orders are forwarded daily to the equipment costing section. There the total cost of each job is computed and posted to the monthly equipment journal.

2. *Monthly equipment journal*

A separate sheet is kept for each unit of equipment on which is entered cost of all repairs, whether done in our own garage (from the work orders) or not. Since the work orders are the only source of data for work done in our own garage, copies of all invoices affecting equipment must be routed to the cost section. In addition to invoices for repairs, all purchases of tires, tubes, gas and oil must be posted to the monthly equipment journal also. In other columns, mileage and equipment rental earned by each machine is entered. The overhead to be applied to garage operations is classified as

a) Direct departmental (garage) expense

b) Indirect expense—portion of the general administration overhead.

The foregoing expenses are classified properly and channelled to our garage over-

head ledger. The garage overhead is forecasted at the beginning of the fiscal year and all such forecasts are revised semi-annually. The garage overhead rate is calculated as follows:

$$\text{Garage overhead} = \frac{\text{Budgeted garage overhead}}{\text{Budgeted direct garage labor}}$$

This rate is used to apply garage overhead to all repairs done in our own garage. (All items posted to the monthly equipment journal are summarized monthly and totals are posted to the equipment master cards.)

3. *Equipment master cards*

These are also kept for each unit of equipment to record all its pertinent history from the day of acquisition until its disposal.

4. *Equipment operating statement*

This is a monthly report showing the degree of utilization of each particular piece of equipment as compared with the budgeted monthly capacity.

From this report, construction management can tell the monthly loss due to idle capacity of available equipment as well as the class and units not utilized or over-utilized. This statement greatly influences many management decisions in the case of jobs taken at marginal return as well as decisions on which class of equipment should be increased by additional units, etc. The equipment operating statement is based completely on the garage forecast. The garage budget is based entirely on three very important elements.

1. The garage overhead
2. The equipment rental rates
3. Capacity distribution

5. *Cost of garage operations*

This statement controls all garage expenses and compares budget and actual figures.

All costs and expenses are budgeted at the beginning of our fiscal year by estimated or expected maintenance costs. The forecasting of maintenance costs is a difficult job but this is overcome by inspection of all equipment at the beginning of each year and the use of statistical data on previous years' performance. The larger the fleet, the closer the forecast established.

RENTAL RATES

Rental rates are based on average capacity of each particular machine. There are several construction associations which have done extensive research in this field. Therefore, average data may be available from the Canadian Construction Association, the Ontario Road Builders Association, and several American associations such as Associated General Contractors of America Inc.

The establishment of accurate and reasonable rental rates is very important in the construction business. Should the rates be too high, the contractor is selling himself out of the market. He may lose every bid. Should the rental rates be too low, he cannot establish a proper mark-up because he does not know what are his variable expenses. In such a case, contractors may be damaging their financial position.

The rental rates at Canadian Construction Company are established in the following way:

1. *Depreciation*

To absorb the depreciation in the rental rates, we have adopted the straight line method of depreciation whereby a uniform percentage is charged off yearly during the economic life of each machine. For this purpose, we adopted the C.C.A. percentage for each particular class. The depreciation percentage is applied to current replacement value. It is based on the assumption that depreciation based on historical costs no longer represents a fair measure of the cost consumed in current operations.

2. Further included in the rental rates is the cost of

Overhaul and major repairs

Based on historical data readily available from our equipment record cards, we establish our average ratio of maintenance cost for each class of equipment.

3. The third element comprising the rental rates is

General overhead

The total overhead figure is established by our forecasts as mentioned before, and the actual percentage to be applied to each particular piece of equipment is established as follows:

On specially prepared work sheets, we list all our equipment grouped in material classes. Then we enter the adopted percentage of depreciation and the calculated percentage representing cost of maintenance. Then the sum of these two factors is applied to the replacement cost and we arrive at a total annual rental value less overhead. The total of this rental is then compared with our budgeted total cost of garage operations. The difference between these two is the total overhead figure to be absorbed by the rental rates. For this purpose, such a balance is divided into the total replacement value of all units and the resulting ratio is the overhead percentage to be applied to each particular piece of equipment.

This calculation is illustrated as follows:

Diesel Crawler Tractor—replacement value		$14,000
Depreciation %	16%	
Maintenance %	11%	
	27% of $14,000	3,780
Other machines	x	x
	x	x
	x	x
Total		750,000
Budgeted cost of garage operations		950,000
Remaining balance representing overhead		200,000
Total replacement value of all units		2,000,000
Overhead % 2/20	10%	
The total rental % will be	37%	
Annual rental rate	14,000	
	37%	$5,180

Now it is necessary to convert this annual rental to a monthly rental rate. For

this purpose, it is necessary to establish an average use in months per year. This figure is readily available in our equipment record cards. Thus we are ready to establish the monthly or weekly or any rate as desired:

Annual rate	5,180
Average number of months of operation annually	6
Rental rate per month	$863.00

According to C.C.A., the weekly rate is based on three weeks monthly.

A PROFIT TARGET FOR THE GARAGE AND THE COMPANY

When all the rental rates have been established, the "capacity distribution based on seasonal work load" is prepared as follows:

EQUIPMENT	CAPACITY DISTRIBUTION BASED ON SEASONAL WORK LOAD												
	Normal Capacity Days Per Year	J	F	M	A	M	J	J	A	S	O	N	D
Backhoe-Sherman	144 days	3	3	6	12	12	18	18	18	18	18	12	6
Backhoe Unit Type	90 days	—	—	2	8	10	12	15	15	12	10	6	—
Compressor 350	156 days	13	13	13	13	13	13	13	13	13	13	13	13
Trucks ½-3T	156 days	8	8	10	12	13	15	18	18	18	15	13	8
Trucks 3-5T Dump	120 days	5	2	3	10	10	15	15	15	15	15	10	5
Generator	72 days	10	8	7	6	5	4	2	2	4	6	8	10

This is established for every class and piece of equipment and an operations forecast is prepared for the coming fiscal year. Figures thus established are compared monthly with the actual performance in our equipment operating statement.

Through the arrangement and accumulation of data as described above, we are able, firstly, to plan our operations and control the most dangerous costs for a contracting company—the creeping hidden costs—which consist of idle capacity and heavy depreciation costs. Secondly, we are able to aid management in establishing sound and reasonable bidding prices based on accurate information. Instead of looking back, the management of the Canadian Construction Company has enough information to be able to look ahead.

FINANCIAL REPORTS

Our financial reporting is based on two principles:

1. Departmentalization of all costs
2. Budgetary control

Departmentalization means that all expenses are channelled so as to disclose the cost of operating a particular division.

Control of all overhead costs is effected through our budget figures. The comparison of the actual expenses with the budgeted shows any unfavorable variances to be investigated.

To keep the division managers informed about the financial situation of their divisions, each manager receives monthly a copy of the financial reports pertaining to his division.

MANAGEMENT REPORTS

Because of the nature of our jobs (variety of smaller contracts), our job accounting is a centralized rather than a decentralized function. The cost reports are prepared in each division. The financial reports are prepared at head office.

While compiling of daily cost figures may be the ideal, we believe that weekly reporting is sufficient in our company. The exact information needed to control job progress varies according to the nature of the job. Therefore, our job control is effected through the following tools:

1. *Weekly standings of specific contracts*

This is a divisional report listing specific contracts in progress and showing the following accumulated information:

a) Actual direct labor
b) Actual direct materials
c) Actual construction materials
d) Actual equipment rented outside
e) Actual miscellaneous expenses
f) Total out-of-pocket costs
g) Total owned equipment
h) Total direct cost to date
i) The total costs are matched with actual revenue on the portion of the work completed, furnished by the estimating department
j) It also shows the estimated revenue on the portion completed, based on the estimated cost profit ratio. The source of the CPR is tender summary data
k) The difference between the actual revenue and the total revenue
l) The difference between the estimated revenue and the total actual costs is the estimated profit. The differences between actual profit and the estimated profit may be an indication of our efficiency or inefficiency in the field or error in the original estimate
m) The purpose of this report is a quick reference as to the actual performance on the job site, especially in the case of smaller jobs.

It is issued not later than the following Wednesday after the close of the week on which it reports. Therefore it is timely to allow corrective measures wherever necessary.

2. *Weekly job status*

This is a weekly unit cost report prepared for certain jobs where unit distribution of cost data is available. The purpose of this report is to accumulate average unit costs which may help in case of bidding on similar jobs, and to control the efficiency by comparing the actual unit cost with the estimated unit cost.

3. *Monthly job cost and forecast report*

This report makes available for management the following information:

a) Total accumulated cost to date
b) Estimated cost to complete
c) Total cost at completion
d) Original estimated cost
e) Authorized extras
f) Total revised estimated cost
g) The difference between the actual cost of completion and the revised estimate shows management the estimated over or under run.

This report does not show the actual profit or loss on a particular job. It discloses, however, the favorable or unfavorable variance in actual costs at the time of completion.

4. *Weekly manpower report*

This report informs management about actual divisional manpower employed during each current week.

5. *Monthly equipment operating statement*

This is a monthly performance analysis disclosing the use of each unit of equipment and the cost of idle capacity in our equipment division.

6. *Marginal pick-up analysis*

This is a monthly statement showing the value of work completed as compared with the forecast It also shows the total overhead for which each division manager is responsible and the percentage of same, liquidated to date.

CONCLUSION

In the section on cost control, an attempt was made to classify and arrange systematically the elements of cost, their relationships to each other and to the whole accounting structure. One of the first needs of a modern contractor is the ability to understand what his problems are, and then to solve them. It was necessary to point out some of the commonest problems in the construction business.

Every cost system must be designed to fit the problems of a particular business. You cannot make the company fit the system. Before any profits are realized, decisions have to be made. To a great degree, these decisions must be based on the ability to understand fundamental relationships between prices, costs and a highly fluctuating volume.

What is to be done when activity drops to 5-10% in the winter or spring months and when period costs, at the same time, are increased by the amount of idle time of foremen and idle equipment? For a medium or large-sized construction company, it may be costly to lose trained foremen to competition. Further, there is no way to fire a tractor, compressor or a backhoe. Yet depreciation is a major cost item for contractors who own and use substantial quantities of equipment. This poses one of the most vital problems in construction, which only a few contractors understand. Even more unfortunate is the fact that, in this area, traditional accounting methods have obscured rather than highlighted the basic facts.

There is only one effective approach to this problem and that is the understanding and use of incremental costing. For a contractor who has no clue to what his costs

are, this approach may be very dangerous indeed. However, a modern contractor, who can depend on his classification of costs and the accuracy of his records, may benefit tremendously by balancing his idle capacity with work taken at marginal profit.

In the Canadian Construction Company, we control all our operations through a direct costing approach because it permits a realistic appraisal for both short term pricing and long term planning. How do we know whether each contract is carrying its fair share of burden if we do not allocate period charges to jobs? Our individual jobs are controlled by the CPR formula. The fixed charges, however, are allocated in total to divisions as part of profit-planning operation. Thus the analyses will not only show where a division is carrying its fair share of fixed charges, but it will show whether it is providing a proper return on capital employed in operating such a division. Once the accumulation of gross profit margin has caught up with the indirect costs, the B/E point is reached and thereafter each dollar of gross profit margin becomes a dollar of net profit. The ratio of divisional gross profit margin to the revenue of each division is all-important as a control factor because it measures the amount of true income derived from the gross revenue. It also indicates whether this is a profitable line, whether it needs special attention, or whether it should be discontinued completely.

In conclusion, it should always be borne in mind that management of a company should be based not only on sound principles of business administration but also on a methodical application of good common sense. Further, it is important to remember that there is nothing static in this world of ours. Everything is undergoing constant change. Therefore, no matter how good a method has been developed, sooner or later it should again be reviewed for further improvement.

For further reading

COST CONTROL FOR LONG-TERM CONSTRUCTION CONTRACTS, by J. M. C. Hall, *Cost and Management*, Sept. 1959.

ACCOUNTING FOR CONSTRUCTION CONTRACTS, by H. E. Crosby, *The Canadian Chartered Accountant*, Jan. 1958.

CONTROL OF A MAJOR CONSTRUCTION PROJECT, by M. S. Young, *N.A.C.A. Bulletin*, Mar. 1956, Sect. I.

CONSTRUCTION COST CONTROL, American Society of Civil Engineers, June 1951.

PERSONALS

D. C. HODSON, R.I.A., a Charter Member and Past Chairman of the Society of Industrial and Cost Accountants of Manitoba, has retired as Comptroller of the Winnipeg Branch of Dominion Bridge Company Limited. Mr. Hodson served 40 years with the company and was responsible for organizing the financial and accounting procedures in five western division plants.

W. L. MOORE, R.I.A., will succeed Mr. Hodson as Comptroller of Dominion Bridge Company Limited, Winnipeg. Mr. Moore is Vice-Chairman of the Council of the Manitoba Society and has lectured in Advanced Cost Accounting for the past five years.

EXHIBIT No. 1

CANADIAN CONSTRUCTION COMPANY LTD.
CONTRACT SUMMARY PROGRESS REPORT

Division Toronto Construction — Period ending April 30, 1959

Contract	% Compl.	DIRECT COST					CPR		Revenue			Gross Margin	
		Labor	Materials	Eqpt.	Misc.	Total	%	Revenue	Billed	Accrued	Total	This Month	Last Month
9216-1	25%	1,000	8,000	1,000	200	$ 3,000	20%	3,600	4,500	(900)	3,600	600	500
8216-75	48%	12,000	4,000	1,500	500	18,000	10%	19,800	17,000	2,800	19,800	1,800	1,400
9216-405	88%	5,000	10,000	1,000	1,000	17,000	12%	19,040	14,000	1,500	15,500	(1,500)	(1,000)
Total Toronto Constr.		178,000	150,000	80,000	20,000	$428,000			48,000	68,000	$548,000	$120,000	75,000

CANADIAN CONSTRUCTION COMPANY LTD.
DISTRIBUTION OF HEAD OFFICE EXPENSES AND DEPRECIATION
TO DIVISIONAL OPERATIONS

Statement No. 18 — Period Ending: Apr.30,1959

THIS MONTH				YEAR-TO-DATE		
Actual	Budget	Variance	Head Office Expense	Actual	Budget	Variance
			H.O. less Deprec.			
9,052	8,709	343	Distributed as follows: Toronto Constr. 30.54 Electr. Ops. 32.38 Mech. Ops. 10.21 GasLine Div.Ops 9.87	25,609	26,139	(530)
829	799	30	Tor. Garage 2.8	2,347	2,396	(49)
29,642	28,519	1,123	Total H.O. 100%	83,856	85,591	(1,735)
			Depreciation:			
742	742	-	Tor. Constr. 2.86	2,226	2,226	-
			Electrical Ops.			
			Mechanical Ops.			
			GasLine Div. Ops.			
8,864	8,864	-	Tor. Garage 34.20	26,592	26,592	-
25,917	25,917	-	Total Deprec. 100%	77,751	77,751	-

EXHIBIT NO. 2

When should a Machine be Traded Off

A Case Study on a Tractor with Dozer and Power Control Unit

CAPITAL DECLINE TABLE

A OPERATING HOURS	B CAPITAL DECLINE FACTOR	C TOTAL CAPITAL DECLINE (Column B x Original Price)	D TOTAL CAPITAL DECLINE AT END OF PREVIOUS PERIOD	E CAPITAL DECLINE Per 1000 Hours	F HOURLY COST (Column E:- Column A)
1st 1000 hrs.	.20	6,600.00		6,600.00	6.60
2nd 1000 hrs.	.30	9,900.00	6,600.00	3,300.00	3.30
3rd 1000 hrs.	.35	11,550.00	9,900.00	1,650.00	1.65
4th 1000 hrs.	.40	13,200.00	11,550.00	1,650.00	1.65
5th 1000 hrs.	.44	14,500.00	13,200.00	1,300.00	1.30
6th 1000 hrs.	.48	15,800.00	14,500.00	1,300.00	1.30
7th 1000 hrs.	.52	17,100.00	15,800.00	1,300.00	1.30
8th 1000 hrs.	.55	18,200.00	17,100.00	1,100.00	1.10
9th 1000 hrs.	.58	19,200.00	18,200.00	1,000.00	1.00
10th 1000 hrs.	.61	20,200.00	19,200.00	1,000.00	1.00

UNAVAILABILITY

A OPERATING HOURS	B AVAILABILITY FACTOR	C HOURLY COST of DOWNTIME	D COST PER HOUR (Column B x Column C)
1st 1000 hrs	.04	10.00	.40
2nd 1000 hrs	.04	10.00	.40
3rd 1000 hrs	.05	10.00	.50
4th 1000 hrs	.05	10.00	.50
5th 1000 hrs	.08	10.00	.80
6th 1000 hrs	.08	10.00	.80
7th 1000 hrs	.12	10.00	1.20
8th 1000 hrs	.12	10.00	1.20
9th 1000 hrs	.16	10.00	1.60
10th 1000 hrs	.16	10.00	1.60

PRODUCTIVITY

A OPERATING HOURS	B PRODUCTIVITY FACTOR	C COST PER HOUR (Tractor &Operator	D COST PER HOUR (Column Bx Column C
1st 1000 hrs	.0	9.50	
2nd 1000 hrs	.0	9.50	
3rd 1000 hrs	.01	9.50	.095
4th 1000 hrs	.02	9.50	.19
5th 1000 hrs	.03	9.50	.285
6th 1000 hrs	.04	9.50	.38
7th 1000 hrs	.05	9.50	.475
8th 1000 hrs	.06	9.50	.57
9th 1000 hrs	.07	9.50	.665
10th 1000 hrs	.08	9.50	.76

SUMMARY

	1st 1000 Hrs	2nd 1000 Hrs.	3rd 1000 Hrs.	4th 1000 Hrs.	5th 1000 Hrs.	6th 1000 Hrs.	7th 1000 Hrs.	8th 1000 Hrs.	9th 1000 Hrs.	10th 1000 Hrs.
Repair costs	1.31	2.10	5.50	5.46	1.25	3.90	5.25	5.01	4.98	2.75
Productivity Cost	--	--	.10	.19	.28	.38	.48	.57	.66	.76
Unavailability Cost	.40	.40	.50	.50	.80	.80	1.20	1.20	1.60	1.60
Capital Decline Cost	6.60	3.30	1.65	1.65	1.30	1.30	1.30	1.10	1.00	1.00
Total Cost per Hour	8.31	5.80	7.75	7.80	3.63	6.38	8.23	7.88	8.24	6.05
Average Accumulative Cost per Hour	8.31	7.06	7.29	7.41	6.66	6.61	6.84	6.97	7.11	7.01

Source: Ray Day, **Replace your Machines at the right Time**—Construction Equipment—March 1959, P. 77.

EXHIBIT No. 3

FINANCIAL & MANAGEMENT REPORTS

CANADIAN CONSTRUCTION COMPANY LTD.
CONSTRUCTION DIVISION OPERATIONS
TORONTO

Statement No. 3 — Period Ending: Apr. 30, 1959

THIS MONTH			EXPENSE ITEMS	YEAR-TO-DATE		
Actual	Budget	Variance		Actual	Budget	Variance
6,149	6,197	(48)	Operating Dept. Salaries	17,456	17,427	29
520	380	140	Travel & Entertainment	1,410	1,140	270
324	382	(58)	Tel. & Tel.	943	1,146	(203)
2,758	1,984	774	Job Maintenance Labour	6,713	5,952	761
568	650	(82)	Driver's Idle Time	1,100	1,950	(850)
148	400	(252)	Foremen's Idle Time	462	1,200	(738)
1,987	1,828	159	Supt's Salaries	7,401	5,484	1,917
1,966	553	1,413	Job Maintenance Materials	2,924	1,659	1,265
175	175	—	Rent	525	525	—
65	75	(10)	Survey Expense	85	225	(140)
10	22	(12)	Permits & Licences	10	66	(56)
652	486	166	Wage Levies	1,510	1,458	52
15,322	13,132	2,190	Total Operating Dept.	40,539	38,232	2,307
8,821	8,343	478	Add: Garage Burden Unabsorbed	16,066	8,343	7,723
806	688	118	Yard Expense	2,207	2,063	144
2,549	2,442	107	Divisional Office	7,477	7,182	265
9,052	8,709	343	Head Office	25,609	26,139	(530)
742	742	—	Depreciation	2,226	2,226	—
37,292	34,056	3,236	Total Constr. Div. Operations	94,094	84,185	9,909
45,000	44,000	1,000	TOTAL OVERHEAD LIQUIDATED	120,000	115,000	5,000
7,708	9,944	(2,236)	PROFIT (LOSS)	25,906	30,815	(4,909)

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Cost and Management

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Editorial Comment . . .

Our Destiny

THERE HAS crept into western world thought a completely erroneous assumption, that, if allowed to persist and spread, will slowly sap the strength of our society like an insidious disease. This concept is called "our destiny". One of the grave dangers in this catch phrase is that it is used with great emphasis and piety by the leaders of nations. Almost daily one hears or reads resounding pronouncements on the great future destiny of a people or a nation.

For responsible people of the world to subscribe to a belief that presupposes a present or future material and social paradise is nonsense. To encourage such a philosophy is creating a false paternalistic atmosphere that dulls initiative and promotes a race of sleepwalkers who are out of touch with harsh realities.

The assumption of a certain unalienable economic or social status by any nation or by any group within a nation seems like a throw-back to the days when the gods were thought to decide man's destiny. Yet the idea is more likely a product of a much more recent social state. All through history, one finds nations and classes who claim certain privileges by birth. The present day-peoples who have claimed a squatter's right to a destiny of economic well-being and social laziness would appear to be the product of a society that has for several generations enjoyed economic and social well-being without many great sacrifices.

This state of anesthesia is easy for people to accept. On the surface it is much more pleasant to believe that the world is our apple, that all is well with the scheme of things, and that the status quo of present beneficence will only be surpassed by "our destiny" to participate in greater luxury. The natural progression of this thinking is the final step in "our destiny" which states that the world owes us a living.

The field of business is not a stranger to this state of lethargic thinking. It is not uncommon to hear such phrases as "a reliable old firm" used to indicate the present status and future existence of a business that in reality is often on the edge of bankruptcy because its present management lacks vision and vigour. It has instead

a fine sense "of destiny" which says that the business prospered in the past and will continue to grow in the future. Perhaps the monopolistic firm is one of the best examples of what can happen when a philosophy of inertia is adopted. When the stimulation of competition is removed the result is lack of efficiency, with a false atmosphere that supports a feeling of cosy security. Soon more vigorous competitors arise to challenge this exclusive field, or governments will intervene because the practice of putting on layers of fat is not considered in the best interests of the public.

It is not uncommon to hear young men entering the business world say that for them further education did not seem worth the effort. Yet without this knowledge (which is rarely compensated for by great initiative on the job), they expect to participate equally in the eating of the cake.

When men entering the business world find that the road to success is not a smooth downhill run but, instead, a very impersonal international contest of knowledge and know-how, many of them cannot face this challenge because their state of mind is conditioned to an automatic destiny of success. The result is that these men cannot cope with reality. They are faced with the choice of being beaten by stronger competitors or resorting to unethical and unlawful practices. Certainly the business world of democracy is not a stranger to either the failure or the criminal. We may be thankful however that it has also produced some hard-headed, vigorous, honest men whose philosophy in life is "to do a mighty labour" in order to achieve a mighty end.

It has been said that the muscles of democracy are getting soft. The dissemination of a social and economic concept that promises a grand destiny without vision and sweat encourages physical laziness. More important, it discourages in the fertile mind of new generations an awareness of the active forces that are shaping the world around them. If a youth is told that he has been born in a country with a great heritage and that there is a greater predetermined destiny around the bend, there is no challenge or excitement of the unknown for him. On the other hand, if he is told that he has been born into a heritage for which he can thank past generations, and at the same time that it is his responsibility to guard and enrich that heritage in many ways, then he has a challenge to meet. History is alive with men who found this challenge and took it up. These giants of the past shaped their own destiny and shook the world. Even greater exciting areas are before us to explore and conquer. This age may never realize its great potential, not because it lacks the intelligence or means for achievements, but because the challenge was never put squarely before the people. Instead of stimulating leadership one hears of a nebulous destiny that lies ahead. This dream world does not sound very exciting unless mountains have to be moved to reach it, and one has a hand in bringing the dream to reality.

Fight Cancer With a Check-up and a Cheque

THE ROLE OF ACCOUNTING IN DECISION MAKING

By R. F. Hogan,
Controller,
Ford Motor Company of Canada, Limited,
Toronto, Ontario.

With the trend towards heavier concentration of capital in equipment, management has even less margin for error than before in deciding on capital expenditures and important changes. All possible resources for before-the-fact analysis of projected action must be utilized. The accountant, through analytical techniques, can use measurements to assess alternatives for management and gauge possible results in terms of profit potential.

THE DECISIONS of management may affect thousands of employees, investors, suppliers, etc., and thus have momentous and far-reaching implications. To discharge aright its important trust, management must select from a bewildering array of possibilities those courses of action that will maximize profits and returns on investment and assets employed. A profitable company is a successful company providing jobs for employees and products for consumers, of the kind they want and at prices they are prepared to pay. An unprofitable company soon withers and dies. From no point of view can it be called a success—not by the unemployed workers; not by the poorer shareholders; not by the impoverished community; not even by the tax-collecting government.

Success, in turn, depends upon correct decision making. This is management's fundamental role and a vital one it is. Not so many years ago a manager relied largely on his own intuitive judgment. This may have been adequate, and in many cases was successful, when Canadian industry and commerce were composed typically of small units serving limited markets. But mere intuition and management by hunch and whim are not sufficient for the dynamic sixties. In this era of missiles and rocketry, commit just a fractional error and you miss the target by a thousand miles. And certainly the problems of modern business management are much greater in number, scope and complexity than those of 50 years ago. This is implicit in progress. The skills of today's qualified pilot of a multi-million dollar jet plane are a great advance over those of the pilot of an old "flying Jenny". He can no longer fly by the seat of his pants! Nor can management!

What then does decision making require today? We certainly can't dispense with judgment. But judgment must be based on solid facts and sound projections. And so enlightened management instinctively turns to its financial specialists to set the compass and chart the course. The contribution of the accountant and the role of accounting are becoming progressively more important. But for this context I must invest the term "accounting" with a brighter aura than its traditional connotation. For decision making needs greater support than the usual efforts of bookkeepers and

Mr. Hogan has been Controller of the entire operations of the Ford Motor Company of Canada, Limited since 1958. Joining Ford of Canada upon graduation from the University of Western Ontario in 1934, he started as a clerk and was promoted successively to Assistant Controller, Divisional Controller and, finally, Controller of the company. A native of Windsor, Mr. Hogan was a student of Walkerville Collegiate Institute and an outstanding athlete. In 1928 he was a member of the Canadian track team in the British Empire Games and he starred as well in tennis and basketball at university.

accounting clerks. Skilled analysts are now required to translate accounting principles into decision making material through the technique of comparative financial analysis. Management cannot use cold, dead figures, but demands interpretive data as solid as Gibraltar, as timely as today's newspaper, and as predictively reliable as the equinoxes. Accounting, strictly speaking, is but one of the many functions of controllership. Were I permitted the honoured practice in ancient novels of alternative titles, I would suggest the dual topic "The Role of Accounting in Decision Making" or "The Controller's Responsibility in Achieving Profit Objectives". And what a challenge this implies: collecting and classifying; interpreting and reporting; coordinating and integrating; analyzing and planning; proposing and counselling—all contributing towards sound financial control and wise decision influencing.

It is important to see that critical financial analyses of alternative possibilities place management in a preferred position for decision making. When comparative factors are habitually mustered by experts, marshalled in significant form, sifted to eliminate the extraneous, proportionately evaluated, objectively interpreted and duly presented, management will avoid many a pitfall. For some of the more common pitfalls I have coined provocative titles, as follows:

1. *Do-Nothing-Ism*—This is negative decision making, or decision by default. I don't mean that standing pat is necessarily a bad thing. At times careful appraisal of pros and cons will clearly justify continuance of the status quo. But this is not what I mean by Do-Nothing-Ism, because in such cases the study itself is evidence of a wide-awake and active management. Do-Nothing-Ism is rather that lethargic, somnolent, drifting attitude that hopes for the best, never prepares for the worst, fails to grasp opportunities, recognizes no progress and shipwrecks the company on the shoal of creeping obsolescence. Energetic financial analysis can do much to prevent such complacency and to abort such catastrophe.

2. *Too-Late-Ism*—In our dynamic economy, time is of the essence. Time is a priceless "commodity". Tardy decisions hand alert competitors a decided advantage. Never forget that the earliest bird catches the juiciest worm. A prime function of financial analysis is to anticipate impending problems and to predict their alternative profit implications, thus providing clear, advance information for timely decisions and preparatory action.

3. *Over-Reach-Ism*—This is the peril when either super-optimism or hyper-pessimism sways management decisions. Policies based only on present favourable circumstance may produce over-expansion or over-diversification because the shape of things to come is not clearly discerned. Conversely, policies predicated solely on present untoward circumstance may produce over-retrenchment or over-pruning just when positive and aggressive counter steps are really indicated. Comprehensive analyses of cost, price, profit and volume relationships; plant capacities; fixed cost allocations; economic profit margins; and economic, industry and technological trends, assist management in directing an integrated program toward established objectives, undiverted by alternating peak and valley distortions.

4. *False-Hope-Ism*—This snare is closely related to Do-Nothing-Ism, but differs in the respect that it represents misguided action of the "wish is father to the thought" variety. An example would be the spending of money to salvage a faulty operation

which sound financial appraisal would clearly show should be discontinued. Sending good money after bad should be anathema in all controllership circles.

So much for generalities and pitfalls. I now draw your attention to some major decision areas where controllership contribution is not only helpful but indispensable:

1. **PRODUCT PLANNING**

The selection of appropriate product lines is a management problem of vital dimensions, particularly in large multi-product companies. It should not be construed that this selection is an immutable lifetime determination made only at the incorporation of a company. Continuing successful operation, within a competitive industry and a dynamic economy, requires extra-sensory perception of shifting consumer preferences, fluctuating seasonal and territorial demands, and impending competitive pressures. Annual model changeovers and intervening design modifications are synonymous with progress in many an industry. Product planning therefore comprehends not only the selection of the fundamental products but also the constant evolution of those engineering and styling improvements essential to financial progress. Accounting and analysis must meet this challenge head on!

Product additions, deletions and modifications are best nurtured in the warm climate of economic justification. Such justification initially involves a critical study of the current and forecasted industry volume for which the subject product must compete. The company's own performance in this market must then be assessed and its future market share objectively projected, viewing product inclusion on the one hand and product elimination on the other hand. The contingent impact on other company products must also be duly considered from both volume and profit points of view. Operating cost differences need careful estimating, special stress being placed on preproduction and launching costs, project expenditures and other out-of-pocket factors. Finally, relative revenues must be forecasted commensurate with competitive influences and sales projections.

Accounted and economic profit calculations are then developed from the above results to reflect the financial advantage or disadvantage or the proposed product change. The subsequent presentation to management should invariably include the break-even volume required to recover the incremental costs of the proposal. The difference between this essential minimum volume and the forecasted sales volume indicates the margin of safety relating to the volatile area of marketing performance.

A desirable feature of such financial presentations is an accompanying analysis of the inherent risks of the product proposal. These include possible competitor counter-action, unfavourable consumer reaction, material obsolescence, etc. It should be apparent that products requiring a costly lead-time of many months and even years for design, engineering, tooling and initial production, before public offering, must represent management decisions based on utterly realistic and comprehensive financial analyses.

As profits are built upon the company's product portfolio, it should be analyzed to disclose its strengths and weaknesses just as carefully as experts review your personal investment and insurance portfolios. And who is better qualified to serve management in this capacity than skilled accounting technicians? Let us therefore realize that dynamic product planning protects the future earnings and encourages the optimum growth rate of the enterprise.

2. SOURCE PLANNING

Having determined by critical financial analysis the product lines and constituent elements to be merchandised in any given period, the problem immediately arises as to what components should be produced in the plant and what parts or assemblies should be assigned to purchasing for procurement outside. Multitudinous are the "make or buy" alternatives facing executives responsible for offering such a complex product, for example, as an automobile. The thousands of separate components, representing tens of thousands of distinct operations, call for a continuous review of in-plant versus outside-vendor placement action.

The cost accountant must therefore provide the comparative economics essential to optimum sourcing decisions. Without overlooking the nature of such pertinent factors as plant capacity, facility utilization, labour supply, quality demands, vendor stability, etc., it is his function to chart the most profitable sourcing pattern. His prescribed costing technique involves the determination, by special analysis for each choice, of all the costs which will change if an alternative choice is made, and the non-consideration of all the costs which will not change in this event. In other words, the incremental cost concept must be employed if the comparative cost estimates are to be a true criterion for management guidance.

One vital principle therefore is to beware of fixed, assigned or allocated costs in comparative cost studies. Total accounted costs are misleading in "make or buy" analyses because they include allocable expenses already irrevocably incurred in the plant regardless of which way the sourcing decision may go. A corollary principle is to beware of expanding the internal fixed cost base before it is clearly demonstrated that parts requiring new capital expenditure cannot be more cheaply sourced to a reliable vendor. Accounted costs may be separately developed to give broad perspective, but I wish to emphasize that only cost differences are significant. Alternative choice comparative costs are therefore quite properly not total but partial in nature, being devoid of all extraneous elements. The use of overhead rates should be avoided, not only because of the fixed expense elements they include, but also because what may be a true average variable rate for an entire department may be decidedly erroneous in regard to a specific operation within the department. The logic of all this may not be readily apparent to non-finance types. But then some non-mechanical finance types may think you can cool a car's engine by stripping the gears.

3. FACILITY PLANNING

All decisions to manufacture or assemble product in the plants of the company obviously involve facility studies. Moreover, existing equipment depreciates and becomes obsolete, challenging management constantly with the necessity for replacement and renovation decisions. Intelligent decisions require advance comparative cost analyses of the various alternatives. A progressive management will therefore conduct a continuing systematic review of its valuable fixed assets. This review will embrace:

(a) Surveys to determine the need for and extent of modernization, replacement, or disposal.

(b) Surveys to insure maximum economic utilization.

(c) Surveys to determine the need for and extent of expansion to meet long-range market and product programs.

(d) Surveys to indicate the advisability of engaging in, expanding, or withdrawing from specific manufacturing and assembly operations.

(e) Surveys to determine the best locations for new or relocated activities.

(f) Surveys to appraise forward product requirements.

Where a formal corporate profitability objective exists, it would normally represent the basic criterion for deciding what facility proposals are justifiable. This is particularly applicable if the profit objective is expressed in terms of a percentage return on assets employed. Of course, certain expenditures are justified purely on policy or safety grounds, but these are the exception and not the rule. If a facility forecast does not indicate profits in line with the return on assets target, then adoption of the proposal should be prompted only by truly extenuating circumstances. This philosophy should apply not only to major facility expenditures but also to individual acquisitions of machinery and equipment and to major expenditures for renovation or modernization.

Each facility justification study should differentiate between the fixed asset, special tooling and project expense elements of the proposed outlay. These items will no doubt receive different write-off treatment on a useful life basis in determining the average annual cost of the proposal. It is advisable to project the costs and profits on a year by year basis as well as for a representative year. A year by year appraisal is valuable to provide management with a clear picture of when the additional profits may be expected to accrue. Although justification of the proposal is based on the representative year picture, the initial project rearrangement, preproduction and launching expenses may result in substantial profit reductions in the first year or two. This short-term adverse result does not invalidate the proposal, but management should be acquainted with its impact so as not to expect a premature return on the investment.

The project justification analysis should include comparative figures for all practicable alternatives measured against retention of the status quo. Three basic yardsticks should be used in evaluating a facility proposal. The first yardstick is the return on additional assets employed computation. This test discloses whether the additional profits estimated to accrue from the expenditure are sufficient to justify the proposed incremental investment. It is customary practice to express this factor as a percentage return on the combination of average fixed asset valuations over the useful life period and total additions to working capital, particularly inventories and receivables. Return on investment should be considered a more acceptable criterion of measurement than the profit margin.

The second yardstick is the pay-out computation. This test reflects the length of time required for the additional profits to compensate for the cost of the initial outlay. In making this calculation, no depreciation is assessed against the incremental profit result applied to the total original investment to measure the recovery period. The pay-out criterion is valuable in assessing whether the outlay will be recovered in a reasonable time in view of the normal life expectancy of the products and facilities and the associated risk of obsolescence. For example, a project expenditure with a life expectancy of six years and a pay-out period of five years carries a fairly high risk in our changing economy.

The third yardstick is the break-even computation. This test reflects the safety margin relative to the volume estimates on which the facility justification has been based. If a relatively small drop in volume would adversely affect the profits and produce an inadequate return, management should be advised that a high degree of risk is inherent in the proposal.

4. CONTROL PLANNING

Having considered the well-defined alternative choice areas of product determination, sourcing allocation and facility provision, I now turn to another vital field of controllership responsibility. Perhaps I should describe it as the stimulation of operating profit improvement, involving complementary programs to increase revenues and to reduce costs.

A soundly administered pricing structure will enhance company revenues. Although competition is an inescapable price-setting influence, wide scope still remains for management to exercise pricing ingenuity. For example, the large range of products and countless design combinations of passenger models, options, accessories, trucks, tractors, implements, etc., offered by an automobile manufacturer, challenge management with the complex problem of establishing that price pattern most conducive to optimum revenue. This challenge calls for accurate product cost allocations to permit intelligent pricing action. The forecasting of sound unit profit margins is very important. If, for example, a certain product is excessively burdened with unused facility costs, inapplicable overhead, etc., the fear of an inadequate margin may influence an uncompetitive pricing structure or the ill-advised soft pedalling of a truly profitable item. On the other hand, under-statement of costs can induce a lower selling price than could be and should be set to produce an acceptable margin at the forecast volume. In either direction, management would be betrayed into an unsound decision because accounting had not played its role properly.

Turning from revenues to cost control, a flexible budget and an integrated performance reporting system are invaluable aids to management. How can cost improvement decisions be stimulated without the existence of acceptable targets in every cost area and the timely reporting of off-target performance? An effective budgetary control activity explains variances from standard by causal factors, peppering all levels of management with skilfully designed incentive reports prompting corrective action. Let the cynic wail that budgeting is the uniform distribution of dissatisfaction. We know its medicinal value to the well-being of a company.

No discussion on controllership contribution to management decisions would be complete without reference to the profit budget. This annual plan, embodying every factor bearing on profit performance, is a master blueprint of corporate financial objectives. Sponsored under the auspices of the finance office, it charts for executive management the profit contribution target of each component of the business. It also serves to coordinate and integrate into one balanced program the manifold and diverse activities of the more or less independent units. The approved profit budget plays a major role in management's day to day decisions, being a constant reminder of their ultimate goal of attaining the approved financial objectives. Moreover, the profit budget is one of the controller's major operating tools, facilitating the proper discharge of his control responsibilities.

Before leaving the subject of cost control, it should be noted that some cost areas

require special analytical attention. Examples include advertising, sales promotion, warranty, and similar large outlay items, where the size of the expenditure is usually regulated by policy and the benefits derived are not subject to exact measurement. For instance, when a special sales incentive campaign is being considered, financial appraisal of the associated economics is both important and difficult. A complete estimate must be developed of all incremental costs, including special bonuses, prizes, discounts, packaging, promotion, administration, etc. This estimate is then related to the incremental revenue expected from the increased sales specified in the proposal. A further step, however, is to develop an appropriate range of cost and revenue relationships assuming varying degrees of success for the campaign. As there are many permutations possible in determining the prize point scale, the qualifying volume gradations, the quota allocations, etc., the analyst must measure various combinations in order to highlight the optimum package. The trial and error method must be avoided at all costs. Characterized by false starts and awkward pauses, it is something like trying to leap a chasm in two jumps: extremely dangerous. How much safer to gauge the target carefully and to launch each program with sufficient impetus and direction to score a bull's eye within the acceptable tolerances.

5. INVESTMENT PLANNING

Financing and investment are inter-related functions largely inspired by the accountant's balance sheet equation. The former deals with the provision of capital requirements and the latter with the distribution of surplus proceeds. I shall not dwell on the intricacies of financing the formation and growth of a company because it is the announced subject of the following address. May I merely comment that many business failures are attributable to a tendency to expand with too little capital and too much borrowing. Operating profits can thus be offset by interest charges to a hazardous degree. Expansion of the business through the borrowing of funds should be undertaken only after careful projections of anticipated profits and cash flow indicating how and when the liability will be discharged. Sufficient flexibility should be provided to absorb certain untoward developments and to permit some additional borrowing in an emergency.

The other side of the coin (shall I say the head and not the tail?) is how to invest funds accumulated in excess of operating requirements, after dividends to shareholders. Cash management is receiving more and worthier attention all the time. Fluctuating exchange rates, global operations, elastic credit policies, disbursement cycles, etc., all challenge management with the problem of optimum use of available funds. As a case in point, the accountant should determine the penalty for immobilizing current assets in premature inventory when short-term securities could bring an interest return—and perhaps a capital gain at the time the inventory is actually required. Intelligent cash management necessitates a sophisticated system of cash forecasting. This invokes techniques of time-phasing the production and sales programs; recognizing non-cash charges; determining the key cash days of the monthly cycle for peak and valley requirements, etc. Daily control of cash balances and trends is not a luxury in dynamic investment planning. Optimum use of cash balances in the short-term money market has provided corporations with very gratifying returns in the recent period of high interest rates.

Funds in excess of necessary working capital, securities and dividends are generally ploughed back into the business in the form of additional fixed investment. I have already touched upon this aspect to some degree in our consideration of facility planning. I would like to suggest, however, certain other alternative types of investment which might be carefully appraised in this regard:

(a) Integration of major products — an example of which is the recent Ford/Canada announcement of plans for constructing a glass fabricating plant.

(b) Acquisition of comparable activities — either to guarantee supply or to lessen competition.

(c) Absorption of additional phases—such as assuming wholesaling, retailing or financing functions previously performed outside the company.

(d) Diversification of product types—mainly through assimilation of unrelated businesses, whether to balance seasonal markets, or to handle by-products, or even to develop management personnel.

Perhaps the alternative choice areas we have touched upon will suffice to illustrate the unlimited scope for accounting and analytical contribution to managerial decisions and to corporate success. I could expatiate to a wearisome length on such other inviting fields as tax accounting, operations research, data processing, internal audit, and many more. But I refrain. Nevertheless, I make bold to state that no other single component of the average company participates in as many and as varied management decisions as the finance activity. And no matter how sophisticated and esoteric its techniques may become, accounting still remains its bedrock foundation. Accounting training in itself sharpens the mind and orients it in the direction of clean-cut decision making. We have learned that a debit is a debit and a credit is a credit and we can work wonders with these simple tools. We can debit assets and credit liabilities; or credit assets and debit liabilities; or debit and credit assets; or debit and credit liabilities; and innumerable adaptations thereof. And all these exercises, though mundane and elementary, develop in the accountant a capacity to tackle problems rationally; to break them down analytically; and to balance their pros and cons objectively. In the final analysis isn't this the very essence of the role of accounting in decision making? It does not surprise me that accountants not only are helping management to make sound decisions but in many instances are themselves graduating into senior management ranks. Aside from an understandable bias we may share in favour of this development, I sincerely feel that it is a movement conducive to corporate prosperity in our competitive world.

PAYNE, PATTON & PUGSLEY

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TOPICAL comments

LOOKING AHEAD

Collective bargaining trends in 1960 show that fringe benefits have displaced higher wages as the major part of the contract settlements. The biggest fringe is now job security and such job protection devices as severance pay, temporary layoff benefits and relocation jobs have become the main bargaining issues. Gains in automation have triggered much of the concern and labour leaders are now asking for joint industry-labour automation studies as well as talks about tomorrow's number one bargaining issue—the shorter work week. *(Factory, July/60).*

Public relations, which has zoomed to a spectacular $2-million share of the collective U.S. corporate budget in recent years, can be expected to grow even more. At present companies employ some 100,000 PR practitioners and, as the voices of stockholders, employees, unions and government become more powerful, business' needs for public relations are bound to increase. The many companies which are setting up foreign operations, too, will find a growing need for effective public relations to help solve the accompanying problems. *(Bus. Week, July 2/60).*

Lighting of the future may emanate from walls and windows. Light is provided by applying power to an electronically conductive material coated with phosphors. The system has been used experimentally with windows, murals, table tops, even cloth. *(Chem. News, Mar.-Apr./60).*

OF GENERAL INTEREST

Some statistics of Canada's pulp and paper industry for 1958 show that:

- There were 128 pulp and paper mills in operation, of which 55 were in Quebec, 41 in Ontario and 14 in British Columbia.
- Production of book and writing paper totalled a record 344,600 tons, an increase of about 3% over 1957.
- Spruce and balsam fir made up about 78% of the roundwood used in pulp manufacture. Also used were Jack pine, hemlock and poplar. *(DBS, July 15/60).*

What kind of people are most likely to change jobs? According to a survey of the Bureau of the Census, 8¼ out of 75 million Americans changed jobs in 1955, and one-third of these did so more than once. As might be expected, the proportion was highest among people in the 18-24 year age group and in the unskilled labour category. The fewest changes occurred among people whose work requires long periods of training or substantial investment of capital. *(The Economist, July 2/60).*

Psychological testing seems to carry a lot of weight among executives. In a survey made by the Harvard Business School, more than half of the 1,861 executives

questioned reported their companies used psychological testing for personnel selection. Fewer than 10% disapproved of the practice. Large companies favoured the method most, with 60% of the companies using the tests being in this bracket. Of the companies that don't use tests, about one-fourth have tried them in the past but discontinued them. *(Bus. Week, July 16/60).*

ON THE PERSONAL SIDE

A new house may be in your plans for the future, so here are some tips on architectural planning:

Pick the kind of architect who can do the job you want. Architects have become highly specialized in recent years and fall roughly in three groups;

Contemporary designers specialize in ultramodern design featuring simple lines, much natural wood and glass and many dramatic features. There is a wide range of choice and a variety of "schools" within this group.

The traditionalists specialize in creating copies of well-established 18th and 19th century styles, such as American colonial, English, French and Dutch period, etc. The highly trained expert in this group is rapidly disappearing from the scene and should be booked well in advance.

The compromisers are the blenders of the modern and traditional and the danger here is that you may end up with a hodge-podge of ill-blended features that make resale difficult.

Before signing a contract, it is wise to interview a number of designers and see samples of their work. A top man will not only draw up the plans, but will select a contractor, supervise the job, and protect against skimping and slipshod construction, so be sure a choose wisely.

Unless you indicate the strict budget limits, an architect may tend to indulge his creative fancies at your expense. He should be able to estimate the cost within 10 to 15%, if urged, and his fee will be about 10% of the total house cost.

Building a house is a time-consuming proposition. Be prepared to spend at least eight to ten months in close consultation with the architect both on the site and in his office. For a custom job, he will want to know all about your needs, your likes and dislikes, and your living and entertaining habits.

Go slowly. An ideal schedule is to select your architect in the summer, have him help you choose the land by fall, and commence building in the spring. *(Bus. Week, July16/60).*

Japanese housewives have enlisted management aid in gaining control of the purse strings. A cardinal rule of one trend-setting company is that a married employee must turn over his pay envelope unopened to his wife on pain of having the pay sent directly to his wife for six months. The system creates domestic harmony and, hence, company prosperity, company officials say.

For the birds is a new carriage-like bird cage that will enable bird lovers to take their pets for a stroll. About 2½ ft. long, 1 ft. wide and 2 ft. high, the cage part is detachable from the chassis and comes completely equipped with perches and feeding troughs. *(Fin. Post, Apr. 23/60)*

The TV set has not yet displaced the book, at least not among the younger generation. Young Canadians (5-14 years) representing one-fifth of the total population, borrowed 45.2% of all books circulated by urban libraries and 62.4% of those circulated by regional libraries during 1958. *(DBS, Apr. 8/60)*

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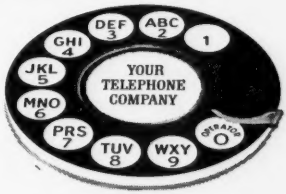

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SOME TRENDS IN FINANCING GOING CONCERNS

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Changes in the money market and money supply affect the overall pattern of corporate financing. This paper reviews trends of company financing in Canada as influenced by external economic factors with particular mention and evaluation of the sale and lease-back method, in view of its current frequency in accounting literature.

THIS TALK has three main topics. The first is long-term leasing of real estate, a practice which has grown during the post-war period. The second concerns trends in other means of financing, means of financing which are evident in the balance sheet. The third concerns some implications of flexible monetary policy to financial management.

LONG-TERM LEASING

Singling out long-term leasing of real estate as a topic in itself may seem to place undue emphasis upon this particular means of financing. Possibly it does. However, growth in leasing facilities in recent years has made the own-or-lease question a decision problem which is encountered frequently by financial managements. Moreover, the practice of leasing appears to have grown in an atmosphere of considerable confusion. Many advantages have been claimed for this particular means of financing which require some modification, are misleading, or are completely fallacious. This confusion more than its present importance, warrants the singling out of leasing for particular attention.

Descriptions of long-term real estate leases have appeared in articles on the subject, so only a brief outline of the main features need be presented here. The provision of long-term leases are tailored to the requirements of the parties concerned. There is, of course, variation from lease to lease, but uniformity is sufficient to permit reference to the typical lease. Its main characteristics are as follows.

It is a *net* lease, that is to say, the lease is written to provide the landlord with a specified *net* return on his investment. The tenant is responsible for all operating expenses, repairs, maintenance, alterations, insurance and property taxes. He has all the responsibilities that he would have as an owner occupying the property. From the landlord's viewpoint, the lease is described as a "carefree" lease.

Rents are determined on an annuity basis. The rent, payable monthly in advance, is set at a level sufficient to amortize fully the landlord's investment over the period

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of the lease (often 20, 25 or 30 years) and provide a specific annual rate of return on the outstanding balance.

The interest rate used to determine the rent is selected with reference to the rate of interest at which the lessee could currently borrow on a long-term basis. A rate of interest in excess of the current borrowing rate is used in setting the rent in the lease. For a company in a strong financial position, able to issue bonds in the public market, the margin might be somewhere from one-half to one per cent. For smaller companies without access to the bond market, the interest rate used to calculate the rent would exceed the rate of interest on first mortgage loans, perhaps by a sizeable margin.

With the property fully paid for at the end of the lease period, unless the lessee were granted some rights to its residual value, leasing would be much more expensive than it is. Leases frequently provide that the tenant may renew the lease for a further period at a reduced rent, commonly one-third the rent for the initial lease period.

Provision is made for the eventuality that the tenant might wish to relocate. This is often effected by inclusion of what is called a "rejectable offer" clause. Any time the tenant wishes to end the lease, he may offer to purchase the property at a price slightly above the unamortized amount of the landlord's investment. If the landlord rejects the offer, the tenant is free to move. If he accepts the offer, the tenant pays the price and disposes of the building as he sees fit.

The tenant thus is exposed to the possibility of capital loss without the accompanying possibility of capital gain. If, at the time the tenant offers to buy, the landlord finds he can sell the property in excess of the tenant's price, he will reject the offer. If he cannot, he will accept it.

Now let us look at some of the advantages that have been claimed for leasing:

(1) Leasing permits businessmen to stay out of the real estate business and thereby to concentrate more on their principal activity. Whether real estate is to be owned or leased, the user must determine its suitability to his needs. Net leases leave the tenant responsible for all the normal responsibilities that an owner would have.

(2) Leasing produces a higher turnover of assets. Profits, not turnover of assets, are the objective of business. Increased turnover produced by leasing is meaningless.

(3) Leasing permits the business to concentrate its investment in current assets which are the most profitable assets, especially for wholesalers and retailers. This claim is wrong for at least two reasons. First, it fails to recognize the essential interdependence of assets. It is combinations of assets (used in conjunction with labour) which produce profit. The problem is to find the most profitable combination. This does not mean persistently substituting current for fixed assets.

The second reason is that leasing does not reduce the amount of investment in the business. Unquestionably, the landlord invests in the lessee's business. He advances resources to it in return for rent. The fact that the resources do not appear on the balance sheet does not deny that there has been investment.

(4) Selling real estate and leasing it back provides funds for expansion. True, but so does any other means of financing. The relevant considerations are: (1) can the additional funds be used profitably? and (2) is the lease the best way of providing them?

Some of the other advantages claimed for leasing can be taken more seriously. Looked at by itself, the lease is clearly more expensive than an equal amount of debt financing associated with ownership. Rent payable by the lessee exceeds the sum of interest on debt plus depreciation for the owner. If, however, leasing permits the lessee, in effect, to raise a larger proportion of his total financing requirements through creditor financing (including leasing), the resulting reduction in the use of equity financing could mean that leasing reduces the average-cost of the total financing (creditor and equity) employed by the enterprise.

Arguments commonly advanced in contending that leasing permits relatively greater use of creditor financing, are as follows: leasing provides "100 per cent" creditor financing, imposes a smaller burden on cash flow because of income tax advantages, improves the appearance of the balance sheet, does not impose restrictions upon subsequent financing, and the landlord has a very limited claim in bankruptcy.

Leasing provides "100 per cent" creditor financing, whereas only some proportion of the purchase price of the property can be borrowed. This claim is subject to qualification. No means of financing can really be said to provide "100 per cent" financing for any purchase, unless that means of financing is completely independent of all other means of financing. But investors in long-term leases are concerned that the equity financing of the prospective lessee be adequate. Concern over adequate equity financing may be direct, or indirect through concern over adequate earnings coverage of the prospective rental.

The commonly claimed advantage for leasing is that it imposes less burden on the lessee' cash flow than would an equal amount of borrowing, amortized in full over an equal period of time. This is because the whole of the lessee's rent is an expense deductible for tax purposes, while only the interest on the owner's debt is deductible. Repayment of principle is not. The owner can deduct capital cost allowance on depreciable property, but this would not make up the difference. No deduction can be made for land. At 5%, capital cost allowance over a period of say 25 years, would only accumulate to 72.3%. The cost of the lessee implicit in paying for the property but not gaining title to it is not a factor in interim burden upon finances.

The comparison as it stands, however, is incomplete. A factor of significance in comparison of tax burden is the difference in interest rates between the two means of financing. It was noted earlier that the interest rate in a lease to a prime tenant might be set at one-half to one per cent above the interest rate at which he could issue bonds. If bonds could be issued at 6%, at 7% the "implicit" interest cost of the lease would be one-sixth greater.

A second point to note is that the present value of near-future benefits is greater than the present value of more distant benefits of equal amount. When the proportion of depreciable property in the real estate is high, tax deductions under ownership exceed those of the lessee in the earlier years.

It is interesting to note that on a property which is 90% depreciable, taking

profits taxes at 50%, the cash burden of a 7%, 25-year, full amortization lease and an equal amount of 6%, 25-year, sinking fund bonds can be equated. At the end of the 25 years, there would be a nominal amount of bonds outstanding which could be readily refinanced. The owner's profits would exceed those of the lessee during the period. If the lease were renewable at one-third the initial rent, the owner would still continue to earn more profits than the lessee. For a lease to be advantageous in respect to cash burden, the proportion of non-depreciable property would have to be higher or the difference between the interest rates lower.

Leasing improves the appearance of the balance sheet. No debt shows up in the case of the owner who borrows to buy. For this reason it is contended that leasing conserves borrowing capacity. It should be noted, however, that sophisticated investors are prone to adjust balance sheet data, where possible, to allow for obligations under long-term leases. Moreover, for them the income statement is more important than the balance sheet.

It appears that leases do not include restrictions upon future financing as is characteristic of bond issues. Nevertheless, if the lease is to be succeeded by subsequent bond financing, sophisticated investors can be expected to take existing lease obligations into account.

The landlord's claim in bankruptcy is relatively weak. It comprises arrears of rent, not the unamortized amount of his investment. He has the property instead. The limit upon his claim upon other assets may facilitate other creditor financing. It is to be noted, however, that the companies most able to acquire long-term leases are those for whom the probability of bankruptcy is very small.

Despite all these qualifications, it is probably true that leasing does enable relatively greater use of creditor financing. For one reason, not all investors are sophisticated. For another reason, it is considerably more expensive. In exchange for a greater potential return, the investor presumably is willing to accept a lower proportion of equity financing to protect his investment. Financial management, however, has still to ask itself if the potential gain from using relatively more creditor financing through leasing is worth the risk. The fact that lease obligations are not fully disclosed does not mean they are not there. It is important that own-or-lease decisions be based upon realistic appraisal.

OTHER MEANS OF FINANCING

Use of all the traditional means of financing undoubtedly has increased in the post-war period. The growth of the economy assures this. But what have been the trends in the structure of financing? Have high levels of profits taxes so widened the gap between the costs of debt and equity financing that there has been an unfavourable trend towards rigidity in corporate financial structures? Have corporations become more vulnerable because of relatively greater reliance upon short-term financing? As more and more fixed assets are used in production processes and more and more wage rates are established by long-term collective bargaining contracts, the matter of maintaining financial flexibility increases in importance.

Data on changes in corporate financial structure over the larger part of the post-war period are presented below. The distribution of liabilities and net worth of corporations in Canada for the years 1948 and 1957 (latest year available) are shown in Table 1, below.

TABLE 1

Distribution of Liabilities and Net Worth of Corporations in Canada,* Taxation Years Ends, 1948 and 1957.

(Per cent)

Liability or Net Worth	1948	1957	Difference
Payables	11	11	—
Bank Loans	5	7	2
Funded Debt	15	17	2
Other Liabilities	11	15	4
Net Worth	58	51	-7
Total	100	100	—

*Excludes banks, insurance companies, inactive companies, co-operatives, personal corporations and certain other companies.

Source: Department of National Revenue: *Taxation Statistics*, 1950, 1959.

Over this period, corporate financial structure changed as follows: The shares of payables in the total remained constant, bank loans increased from 5 to 7%, funded debt from 15 to 17% and other liabilities from 11 to 15%, while net worth decreased from 58 to 51%. According to these figures, there has been some substitution of both short and long-term debt financing for equity financing. Does this mean that there has been an unfavourable trend towards rigidity in corporate financing?

Probably not. Part of the decline may be purely statistical. The data are based on financial statements made for tax purposes. Changes in the Income Tax Act have been in the direction of permitting higher capital cost allowances on depreciable assets during their earlier years.

The aggregate debt equity ratio of corporate business rises and falls with changes in the division of new financing. The latter can be expected to respond to changes in the relative costs of debt and equity financing. Conditions in 1958 and 1959 were generally favourable to equity financing. Partial data indicate a post-1957 trend towards relatively greater reliance upon equity financing. Data on bank loans, bond issues, share issues and profit retention suggest that such a change has occurred. In 1957 the ratio of the sum of net bank borrowing by business and net new issues of bonds to the sum of net new issues of shares and corporate net profit retention was 77%. In 1958 it declined to 45%. The ratio for 1959 will probably prove to be about 35% when the figure for net profit retention becomes available. It seems reasonable to conclude that the debt-equity ratio has declined from its 1957 level of approximately one-to-one and that over the post-war period the trend has been largely horizontal.

The same probably holds true of the ratio of short to long-term financing. From 1948 to 1957 payables showed no change in relative importance. The proportion of bank loans increased, but with the substantial liquidation of loans in 1958 they have probably declined in relative importance since 1957. "Other liabilities" is a mixture of short and long-term liabilities, including such items as deferred income, deposits on contracts, loans from officers and shareholders and certain reserves. Unless the short-term proportion of this aggregate has increased appreciably, the importance of short-term financing has probably not increased significantly. As noted above,

the decrease in net worth may be overstated.

Relative stability in the structure of financing can be attributed in large measure to stability in lenders' standards.

Corporations raise the funds they need from both internal and external sources. Internal financing (retained profits plus the amount of non-cash charges) continues to be a major source of funds. Its relative importance fluctuates from year to year, but it is always large. In the period 1952-59 in the total of corporate internal financing, net new issues of shares and bonds and net bank borrowing by business (including non-farm unincorporated business), the proportion which was internal financing ranged from a low of 63% to a high of 79%. The mean annual proportion was 72%. The highest ratios were at the end of the period.

This is not a new condition. Corporations have long followed the practice of retaining substantial proportions of their profits and, of course, have long made non-cash charges against revenues. In the post-war period, an income tax incentive has been added to long-standing reasons for using internal financing extensively. There may have been a trend towards relatively greater use of internal financing.

Some financial observers would regard such a trend as an unfavourable development. They argue that internal financing tends to misallocate resources. Expansion may take place more for its own sake than for profit. Given a choice, shareholders would often invest the profits in other businesses.

Space does not permit a discussion of this view. It can be noted, however, that it is subject to the qualification that expansion through internal financing requires the earning of profits. Moreover, ability to finance expansion from within varies with the level of profits earned. On this and other grounds, the argument that internal financing misallocates resources is open to question. This is not to suggest that corporate managements should view internal financing as a source of "free" funds.

Thus far, nothing has been said of trends in the terms or characteristics of financing. Actually not much can be said on this subject. We have very little systematic information on the terms of any means of financing.

Two developments can be noted. One is the well known increase in interest rates. Industrial bond yields, for example, as indicated by the McLeod Young Weir bond average, rose from 3.38% at the end of 1947 to 6.22% at the post-war peak in February 1960. This was an increase of 84%. The other development is the modification that has been made of the standard "call" provision which is actually included in issues of senior securities. The standard call provision now in use precludes calling the issue for the purpose of refinancing at lower cost during the first ten or so years that the securities are outstanding. A few years ago, call provisions were not restricted in this way. This means, in effect, that the "price" of senior capital has increased more than the increase in yields indicates.

MONETARY POLICY AND THE FINANCE FUNCTION

During the post-war period, there has been a fundamental change in government monetary policy. By now, businessmen are generally aware of this fact. I am not sure, however, that the implication of the change to the management of enterprise is fully appreciated. The change in monetary policy has increased the importance of the finance function.

In the early post-war years, monetary policy was directed towards maintaining a low and stable interest rate structure to encourage economic expansion. The

central bank supported the market when the general public liquidated large holdings of Victory Bonds. Interest rates were held down at the expense of control over the money supply.

Under these conditions, the task of providing money to finance going concerns could scarcely be described as "challenging". Corporations could liquidate their wartime accumulations of bonds at favourable prices and the cost of borrowing additional funds remained low. There was plenty of money to borrow and concurrent inflation was easing the burden of servicing debts.

Since the early 1950's, we have had a different monetary policy. The money supply is controlled rather than the level of interest rates. The latter fluctuates. The new policy attempts to promote a stable course of economic growth. When the rate of economic growth is rapid, tending to outstrip our capacity for growth, monetary expansion is limited. The purpose is to contain inflationary pressures and to prevent the development of boom conditions in which decision making tends to become reckless and the groundwork for depression is laid. At such times funds to finance expansion become scarce in relation to the demand for them. Apparent profit-making opportunities exceed financial capacity to undertake them. When the rate of economic growth shows signs of declining below our capacity for growth, the money supply is expanded. The purpose is to enable sufficient projects to be undertaken to maintain a sound rate of growth. Depending upon the extent of monetary expansion, interest rates fall.

Flexible monetary policy places a premium on good financial management. When interest rates fluctuate, the matter of timing fund-raising operations increases in importance. Interest rates fluctuate more rapidly than other prices. Changes of 10% to 15% in the price of bond money can occur in just a few months. For example, in the five months, May to September, 1959 the McLeod, Young Weir average of industrial bond yields increased from 5.25% to 6.05%, an increase of 15.2%. On a $10 million bond issue over a period of ten years, this would mean $800,000 additional interest cost. Timing the original issue is more important now that "calling" for the purpose of refinancing at a lower cost is restricted.

Flexible monetary policy increases the importance of the finance function in another and more important way than the one above. In periods of monetary restraint, the question arises as to whether the firm can get all the money it requires to undertake any new profit-making opportunities that it has. When money can be readily obtained and financing costs are low, excess investment in, say, inventories and receivables, while undesirable, may not be very costly. But when money becomes scarce, cost increases. This is not so much because the cost of borrowing increases, but rather because investment opportunities with prospective returns of, say, 20% might have to be foregone because of lack of funds. Thus financial control increases in importance.

Flexible monetary policy adds another dimension to competition. In periods of monetary restraint, not all firms will be able to carry out in full their programs for expansion. Some firms will be forced to reduce them. Firms that finance before restraint develops not only pay lower interest rates; they are assured of having the funds when they need them. They stockpile short-term investments. Other firms are left to bear the burden of restraint. Their unfilled orders will increase faster than their sales. The firms with the money will be more able to deliver.

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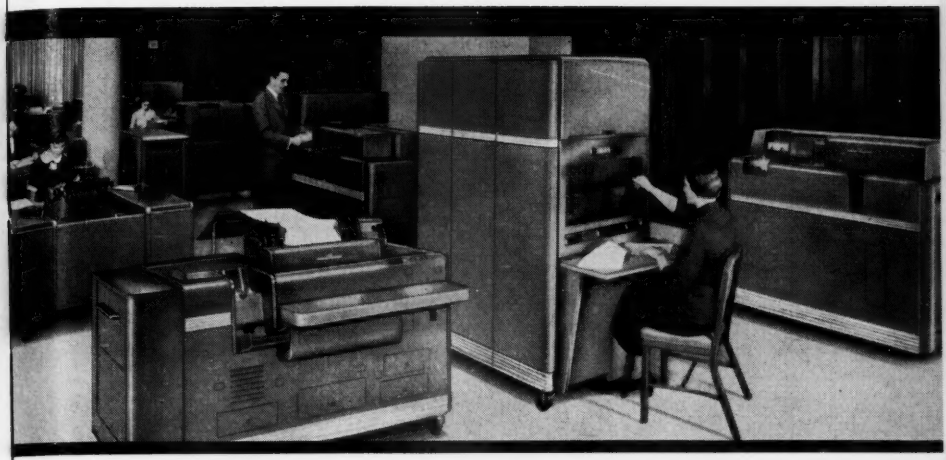

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The Editor's Choice

SALES-ORIENTED OVERHEAD COSTING
by D. H. Li, The Controller, May 1960.

Here is a new concept in overhead costing. Fixed overhead costs are no longer caused by emphasis on production capacity but rather are the result of servicing a certain sales level. Thus the author suggests it is better to use expected average sales as a basis of allocation for overhead rather than productive capacity.

FUNCTIONAL COSTING IN A LIFE INSURANCE COMPANY
by J. R. Neyrey, N.A.A. Bulletin, May 1960.

One of the most interesting points in this article is the type of company it covers. In this issue of the *Bulletin,* there is also an article on accounting in banking. The increased competition in these fields, together with inflation and rising costs, has made better management planning and control of costs a necessity. The author outlines a functional cost system, and one can speculate that developments of cost controls in financial institutions will be a big aid to costing in such areas as distribution.

DEBATE AT WICKERSHAM MILLS
by A. T. Collier, Harvard Business Review, May-June 1960.

In this playlet, we are an audience to a meeting of the owners of a textile mill whose president has just died. The fate of the business is being discussed, and four of the owners are asked for their philosophies on leadership and the purpose of a business. On the basis of the discussion, the reader is asked to vote for his choice of president for the mills. While most readers will not agree entirely with any view expressed, this is a very interesting illustration of the widely divergent views that business leaders hold as to the purpose of their business and the method that should be used to attain the goals.

PROBLEM IN DECENTRALIZED PROFIT RESPONSIBILITY
by J. Dearden, Harvard Business Review, May-June 1960

In this article, the author gives actual illustrations of how divisional management may make investment decisions that will result in greater book profits for the division but which will, in reality, cause a much greater loss for the company as a whole. This conflict of interests is caused by the method used to value and to depreciate divisional assets. A proposed system is outlined wherein the benefits of decentralized control are supported by a community interest and not jeopardized by encouraging divisional management to adopt destructive practices in order to show greater paper profits.

A PRODUCTIVITY GUIDE FOR MANUFACTURING MANAGEMENT
by R. L. Hapgood, The Controller, May 1960.

From the Rucker principle that unit labor costs and prices are directly proportional to hourly employment costs, and inversely proportional to output per man hour, this author goes on to develop ratios by which plant-wide economic activity and performance may be measured. He goes on to illustrate uses of his measurement for control purposes, pricing, and union negotiations.

Books in Review...

CLASSICS IN MANAGEMENT—SELECTIONS FROM THE HISTORIC LITERATURE OF MANAGEMENT

Edited by Harwood F. Merrill, American Management Association, New York, N.Y., 1960, pp. 446, $9.00.
Reviewed by Gerald G. Fisch, B.Sc.

Mr. Merrill, who is Vice President in charge of Publications and Membership of the American Management Association, has collected rather carefully, the writings of some 16 men and women. The selected papers were written by people who lived and worked in the last 150 years. Each essay or group of essays has an editorial introduction which places the essay into historical perspective.

The essays show in a most interesting fashion how our present management thinking has evolved. Changing ideas about people at work, about management methods and the life and work of management pioneers is sketched in balanced historical context.

The book is recommended to anyone interested in management and administration, or who is a student of the subject, who occasionally likes to think about the whys and wherefores of present day problems and our instinctive approaches to solution. *Classics In Management* should certainly increase one's insight into the various management movements and the diverse persons who have contributed to our present-day thinking.

The title, *Classics in Management*, is aptly chosen. The selections have been carefully picked to include such well-known pioneers in management as Frederick Winslow Taylor (1856-1915), Henry Laurence Gantt (1861-1919), Frank Bunker Gilbreth (1868-1924), and George Elton Mayo (1880-1949). There are also some very excellent essays by perhaps somewhat less well-known but extremely important contributors to the art and practice of management. These include Robert Owen (1771-1858), Charles Babbage (1792-1871), Captain Henry Metcalfe (1847-1917), Henry Robinson Towne (1844-1924), Russell Robb (1864-1927), Harrington Emerson (1853-1931) and Mary Parker Follett (1868-1933).

Books Added to Library...

International Economics	Behrman and Schmidt	Rinehart and Company, Inc.
Introduction to Business—A Management Approach	Weimer	Richard D. Irwin, Inc.
Industrial Accounting (2nd Ed.)	Specthrie	Prentice-Hall, Inc.
Investment Analysis (3rd Ed.)	Prime	Prentice-Hall, Inc.
Letters for Special Occasions	Egner	McGraw-Hill Book Company, Inc.
Mathematics in Business	Lowenstein	John Wiley & Sons, Inc.
Mathematics of Finance	Lee	Richard D. Irwin, Inc.

Management in Industry	George	Prentice-Hall, Inc.
Modern Corporation Finance (4th Ed.)	Husband and Dockeray	Richard D. Irwin, Inc.
Modern Market Research—A Guide for Business Executives	Adler	Philosophical Library
Modern Marketing	Hepner	McGraw-Hill Book Company, Inc.
Practical Logic	Beardsley	Prentice-Hall, Inc.
Principles of Accounting—Intermediate (5th Ed.)	Finney and Miller (Canada Edition prepared by Kenneth F. Byrd)	Prentice-Hall, Inc.
Principles of Accounting—Introductory (5th Ed.)	(Canadian Edition prepared by Lin C. Mitchell)	Prentice-Hall, Inc.
Principles of Management (Rev. Ed.)	Terry	Richard D. Irwin, Inc.
Report Writing (3rd Ed.)	Gaum, Graves and Hoffman	Prentice-Hall, Inc.
Report Writing	Ball and Williams	Ronald Press Company
Report Writing for Accountants	Palen	Prentice-Hall, Inc.
Standard Costs—How They Serve Modern Management	Bennett	Prentice-Hall, Inc.
Statistics for Business Decisions	Kurnow, Glasser and Ottman	Richard D. Irwin, Inc.
Thinking Straight (2nd Ed.)	Beardsley	Prentice-Hall, Inc.
Wage Determination	Backman	D. Van Nostrand Company, Inc.
Writing Business Letters	Menning and Wilkinson	Richard D. Irwin, Inc.
Written Communication in Business	Shurter	McGraw-Hill Book Company, Inc.

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RELATING FINANCIAL POLICIES TO THE BUSINESS OUTLOOK

A PANEL DISCUSSION

What are the short and long-term prospects for the Canadian economy? What important factors will be at work and how will they influence the state of business? What can be done to meet the challenge of the future? In the following panel, four experts register their predictions on the immediate and long range outlooks in taxation, labour, business, and the economy.

I—THE OUTLOOK IN TAXATION

By J. Harvey Perry,
Director, Canadian Tax Foundation,
Toronto, Ontario.

Mr. Perry joined the Canadian Tax Foundation in 1952 as Director of Research and since 1956 has been Director and Chief Executive Officer. A graduate of the University of Toronto in economics and political science, he was formerly with the federal Department of Finance, where for 16 years he acted as one of the Minister's advisers on taxation. Special assignments as tax adviser have taken him to Nigeria, West Africa and Ghana and he has just completed a survey of the budgetary system of the Province of Newfoundland. Mr. Perry is the author of two books on taxation and co-author of another, *Financing Canadian Federation*. He is also Chairman of the Toronto branch of the Canadian Institute of International Affairs.

TWO YEARS ago, in participating in a similar panel,* I reviewed tax prospects for both the immediate and long-term future. At that time the federal budget was heavily in the red, and I forecast a deficit of over $600 million for the year then running and an even larger deficit of between $800 and $900 million for the year following. For the very long term the outlook then was that, without increases in taxation, the federal budget could remain in deficit for several years—perhaps as many as ten.

Unfortunately these prognostications were fairly accurate and, had it not been for remedial tax increases, the national budget would still be in the red today. The present government deserves credit for having the courage and foresight in its 1959 budget to stop up one of its major financial drains—the deficit in the Old Age Security Fund—by increasing the taxes levied for this purpose and, at the same time, making other increases to support the general budget. This action had the happy and wholesome result of substantially reducing the deficit last year and enabling the Minister to promise a balance for the current year.

Events of the last two years may not appear to have much to do with the outlook for the future but, in the present juncture of the federal budget, they are all

*Relating Financial Policies to the Economic Outlook, *Cost and Management*, July-August 1958.

important. We at least now need not fear further federal tax increases simply for the purpose of balancing the budget. This job is behind us and, unless unforeseen factors emerge, should have settled the need for tax raises for some time.

Some of the unforeseen factors which might give rise to tax changes, either upward or downwards, are:

(1) an election; it would appear that in the next fiscal year there may be a surplus of modest proportions—perhaps $200 or $300 million—and this might be used for a pre-election tax reduction. There is just as much likelihood, however, of it going out in increased expenditures. Something extra must be found for the provinces to sweeten the pot for the new tax agreements in 1962, and pressure for new programs becomes intense as elections approach.

(2) panic over the state of the economy; if concern continues to grow over unemployment, the foreign payments balance, savings by Canadians for Canadian investment, the effect of high taxes on ability to export, and sundry other problems of the day, there could be a round of tax measures designed primarily for economic stimulus. These could include accelerated depreciation, special rate concessions for export profits, allowances against personal income tax for risk investment, and so on. Few of these devices offer much hope for success. They do not touch the basic issue—the fact that tax rates are all high, and are so largely as a result of our own choosing.

To sum up the outlook for federal taxation, I would say that a realistic appraisal gives little reason to expect major changes in any direction for the next year at least.

At the provincial and municipal levels, trends for the immediate future will turn largely on the outcome of the new negotiations for tax agreements. Proposals will be advanced by the provincial representatives—and most forcefully by the Premier of Ontario—calling for a revision of terms which would add $250 to $300 million to the present annual cost of over $500 million. Ontario will urge its co-called 15-15-50 formula with vigour in the knowledge that its financial needs are becoming more pressing each year and that, if the money is not forthcoming from Ottawa, it may have to come from Ontario taxpayers directly. The most likely move would be to put on a retail sales tax.

All the other provinces will support any raid on the federal treasury, and with some, particularly the Atlantic provinces, the stakes are high. Where there are no alternative souces of revenue, and where the flood of demand for municipal services simply cannot be stemmed without serious damage to our economic life, the only hope is for further help from Ottawa.

The position of the federal Minister of Finance is not an enviable one. Out of the very slight margin of surplus he is likely to have in the next 18 months he must perform a miracle at least comparable to the biblical loaves and fishes. My hunch is that he will not even try to give the provinces more than a sop, and as a result we will see higher provincial taxes in the near future. The only real alternative is that, as citizens, we begin to show some appreciation of the inevitable equation of government finance under which higher expenditures *always* equal higher taxes.

II–THE OUTLOOK IN TRADE UNION DEMANDS

By Russell Bell,
Assistant Director of Research,
Canadian Labour Congress,
Ottawa.

Mr. Bell has been Assistant Director of the Canadian Labour Congress since 1958. Born in England and raised in the United States, Mr. Bell served with the R.C.A.F. overseas during World War II. He later attended Carleton College, graduating in political science, and the University of Toronto, where he received an M.A. in political economy. In 1951, he became parliamentary secretary to CCF national leader M. J. Coldwell, M.P., and in 1953, Research Director of the CCF Party. Since 1958, he has been a member of the CCF National Executive and the CCF National Council.

WHEN our Director of Research, Dr. Eugene Forsey, appeared before you two years ago, the Canadian economy was in a recession. Unemployment was at a relatively high rate. It was largely the result of the downswing in the business cycle. Dr. Forsey, in speaking on the subject, "The Outlook in Trade Union Demands", was naturally concerned with ways and means of getting out of the recession as quickly as possible. His remarks were therefore directed to this end.

Today we are no longer in a recession. While our economy is far from booming, general economic activity is above the pre-recession peak. But we still have the same serious problem of unemployment which we had two years ago. In the past year or more we have discovered that it is quite possible to have a relatively high level of economic activity and at the same time have considerable unemployment. Furthermore, unless appropriate action is taken by both government and management, a high rate of unemployment could become a permanent feature of our economy. Therefore, in discussing the outlook in trade union demands, my remarks will deal briefly with certain measures which organized labour is asking for as a solution to the problem of unemployment. These measures involve demands on both government and management. Some require the expenditure of money, and some don't.

The fact that general economic recovery from the recession has been much better than employment recovery is indicated by a comparison of the industrial production index with the industrial employment index. For example, the latest available industrial production index (seasonally adjusted) is about 7.1% *above* its pre-recession peak. On the other hand, the composite index of industrial employment is about 3.7% *below* its pre-recession peak. While these two indexes are not precisely comparable, their trends nevertheless indicate a considerable gap between production recovery and employment recovery, and a substantial rise in productivity in the past couple of years.

Some of our unemployment today is the result of a fairly long lag in economic growth. We just haven't grown fast enough economically to keep up with our expanding labour force. Some economists have made much of the fact that real per

capita increase in gross national product during the decade of the 1950's was only 17%. Most of that increase took place in the early 1950's. Between 1956 and 1959, real per capita G.N.P. actually *dropped* by 3%. During the same period, however, our labour force grew by roughly 8%.

WAGES

Now, one means of expanding economic growth is to make it possible for consumer demand to grow. This requires a constant growth in purchasing power. Purchasing power is, of course, raised in the main through wage increases. This is how the trade unions can, and do, play an important role in promoting and sustaining economic growth. Constant pressure for wage increases in Canada, the United States, and other advanced industrial nations in the West has long been one of the primary stimulants of economic growth.

If we are to increase our present low rate of economic growth to enable our economy to absorb labour force increases, then organized labour must continue to try to obtain the maximum possible in wage increases. A stable wage policy would only strengthen those forces which have been slowing down ecomomic growth.

There are, of course, depressed and declining industries in Canada where wage increases, at least for the present, may simply be economically impossible. But the substantial rise in productivity in the industrial sector generally suggests that wages can continue to rise within the general limits set by productivity increases without causing inflation. The kind of wage increases which unions will ask for will of course vary from industry to industry, or even from plant to plant within an industry, and will depend on the ability of the industry or plant to pay.

TIGHT MONEY POLICY

One cause of the slow down in our economic growth has been a tight money policy. Yet the kind of inflation we have experienced in recent years does not justify the use of general monetary controls. The adoption of a tight money policy can only be justified in the case of a general and widespread demand inflation, or the kind of inflation which is largely caused by an excessive consumers' demand in an economy with no idle manpower and no idle plant capacity. We do not have such an economic situation today. In addition to having idle manpower, we have unused plant capacity. In an economy with idle manpower and resources, a certain expansion of the money supply to employ these idle resources should not result in inflation.

PUBLIC INVESTMENT PROGRAM

To help provide and maintain full employment, the recent Convention of the Canadian Labour Congress called for a public investment program, federal, provincial and municipal, to build houses, schools, hospitals, parks and roads, and conservation projects. Social investment has lagged seriously, and the volume of unmet needs in this field would provide a lot of employment in Canada for a long time.

PROGRAM TO ASSIST DISPLACED WORKERS

The wide gap between production and employment indicates that technological changes are one of the main causes of unemployment in Canada today. Our Congress Convention asked government action as follows to enable displaced workers to fill new jobs:

(1) Train and retrain such workers, through the National Employment Service and other agencies, with full pay during such training or retraining;

(2) Bring new industries to areas where there is surplus labour, where this is possible; and where it is not possible;

(3) Help these workers to move to where the new industries are;

(4) Pay the cost of relocation, transportation and resettlement.

The Congress Convention also asked for the establishment of a national retraining and relocation advisory committee representing organized labour, management, social agencies and other groups to assist in the development and administration of such a program. It further urged that both government and management provide adequate compensation and protection against hardship for displaced workers.

These, then, are some of the demands which organized labour is asking of both employers and governments to help solve the unemployment problem. If these demands are met, the prospects for preventing unemployment from becoming a permanent thing should greatly improve.

III—THE OUTLOOK IN THE NATIONAL ECONOMY

By W. Allan Beckett,
Assistant Professor, Institute of Business Administration,
University of Toronto,
Toronto, Ontario.

A regular contributor to *Cost and Management*, Prof. Beckett is presently Assistant Professor, Economics and Statistics, at the University of Toronto's Institute of Business Administration. He is also Director of the business consulting firm of General Research Associates Limited. A native Torontonian, he was educated at the University of Toronto, receiving a B.A. in political science and economics in 1948 and an M.A. in economics in 1949. He was formerly Director of Research with the Department of Labour of the Province of Saskatchewan (1950-52) and following that was an economist with the Forecast Section, Economics Branch, Department of Trade and Commerce, Ottawa.

ALTHOUGH the decade of the 1960's is only six months' old, it has already given evidence of being a retarded child. If the "Challenge of Change" has some real significance, and I believe it does, then it seems to me that the outlook for the national economy should be couched in terms of realism, even if this requires an agonizing reappraisal of the future of Canadian business.

To set the prospects of change in perspective, let me draw attention to the well-known fact that the period since the end of World War II has been one of unparalleled prosperity for business in North America and more particularly in Canada. It has

been a period characterized by rapid rates of physical economic growth and a rapidly rising standard of living, leading some of my colleagues to the view that we are now an affluent, if not opulent, society. And behind the tremendous economic surge of the past 15 years has been an unprecedented investment boom.

As we turn to the outlook for the rest of this year, and for the rest of this decade, we may well ask ourselves the sobering question of whether this period of rapid growth has not come to an end and whether the 1960's have ushered in a new and different kind of growth. Economic developments in Canada, so far in 1960, have indicated a retardation which, as of now, we can call a recession. The question facing us is whether this recession is going to be similar to those mild adjustments that we have experienced in the earlier post-war period or whether something more fundamental is happening. And whether policies, both public and private, can be designed so that we can meet the challenge of change and growth successfully.

First of all, let me document the current economic situation. In the first quarter of 1960 Canada's Gross National Product, the value of goods and services produced in the period, registered its smallest quarter gain since the expansion that began in the middle of 1958. According to the official statistics, there was during the first quarter of 1960 an actual decline in the volume of final purchases on the part of persons, businesses and governments and the small increase that was apparent in total GNP was accounted for on balance by a movement of goods into inventories.

Among the components of the GNP, there were significant declines in personal expenditures on consumer goods and services and a fair decline in machinery and equipment expenditures by business. Housing activity in the first quarter remained at the sustained fourth quarter level, but recent trends in new housing starts suggest a sharp dropping off in housing activity as 1960 progresses. Business spending for non-residential construction was sustained in the first quarter of 1960, but a further increase is necessary if the original intentions reported by the Department of Trade and Commerce are to be fulfilled. At the same time, in the first quarter of the year, exports rose very substantially and in the light of very little change in imports the deficit on current account narrowed sharply, contributing statistically to the overall increase in final output. But as mentioned previously, the entire gain in total final output was stored on a shelf in the form of an increase in business inventories.

Among the 21 sensitive indicators, which we use to analyze and forecast the Canadian business cycle, declines are apparent in no less than 14. Among the leading indicators, which include the stock market, new contracts for housing and other building, average hours of work in manufacturing, corporate profits, basic industrial material prices and new orders for producer's durable goods, we find only one showing sustained advances and that is corporate profits through to the fourth quarter.

Declines have begun to pervade the so-called coincident indicators, the broad measures of economic and industrial performance. Industrial employment hit its peak as long ago as last October. The volume of unemployment, seasonal factors apart, has been exceeded in only three months in the whole post-war period and those were the months just as the 1958 recession ended. Even the index of industrial production declined some six points since January. The very high level of exports in the first quarter of the year has not been maintained into April and May. Car-

loadings have reflected the downward drift in exports and some price weakness is evident. Despite the improvement in retail sales as a result of the April Easter, the high levels of last fall have not been pierced and the volume of consumer debt is growing at a slower rate. All this adds up to the fact that we have already entered a new recession a bare two years after the end of the 1957-1958 decline.

A further word about trends in various manufacturing industries. Total metal production is declining; fuel production has been flat since the fourth quarter of 1959; food and beverage production registered some weakness in the fourth quarter of 1959; rubber products suffered a decline throughout 1959 which may have only recently been reversed; the leather products industry has been in a decline during the whole of the past year; textiles have revived after some weakness during the last half of 1959; the clothing industry has been declining since the middle of 1959 and shows no signs of turning around as textiles have done; total paper products may well have reached their peak at the beginning of this year; the iron and steel industry is in the throes of its own little recession; transportation equipment declined throughout most of 1959 and, while it has shown some signs of life so far this year, remains sharply below the peaks reached back in 1956 and 1957; the non-metallic mineral products industry has been declining since last October. This leaves on the rising side the electrical apparatus and supplies industry, the non-ferrous metal products industry, the miscellaneous manufacturing industries, chemicals, the printing and publishing industry, which is beginning to show some signs of weakness, and possibly the food and beverage industry, a total of seven expanding out of 17.

There are two views about the course of business activity in Canada for the remainder of 1960. One view, the one to which I subscribe, holds that the declines that are already apparent, apart from seasonal factors, will tend to cumulate for the rest of 1960 and, when the returns are in from the outlying months, that we will document this as a recessionary period, one which got under way probably in May or June. The other view holds that this is a rest pause and that activity will resurge in the fall months. This is a view for which good grounds can be found in the historical pattern of cycles in Canada, but there is as yet, little evidence, especially among the leading business indicators, that such a recovery will in fact occur. For the purposes of short-term planning only, the cyclical shape of business over the next several months, say through until September or October, will be essentially the same whether we are in fact already in a recession or whether it is merely a rest pause. In either event, for short-term planning, business would be wise to pay close attention to the level of stocks or inventories in relation to final sales and to embark on new and bold plans only with sound scientific guidance.

However, this is not much guide to medium-term planning, since here it is most pertinent whether this is or is not a slight pause for refreshment. It is my own thesis that the decade of the 1960's has ushered in a new period which will be characterized by a slower rate of growth. I base this thesis on a number of factors but one will serve to illustrate. It is a fact that during the past decade we have created a great deal of basic industrial capacity. It has been this investment boom which has sparked our rapid rate of growth and rapidly rising standard of living. We now have a great deal of such basic industrial capacity. It appears, then, that the *real*

incentives to create new capital are for the moment, and possibly for some time to come, missing. Let me put it this way. Here we are, whether we are just in a recession or not, at the highest level of economic activity ever attained on the North American continent and yet we are utilizing only 95% of our labour force and probably only 90% of our capital equipment. I might add that even at this level it is profitable, at least for the 95% who are employed and the owners of 90% of the capital. At the same time, this implies increasing competition for markets and increasing competition for jobs and I think it's the kind of competition that we should welcome. But it also implies that the volume of new capital formation is likely to be depressed for a medium-term period. What this means is that a dynamic to which we have become accustomed over the last 15 years will be somewhat less dynamic, that our rate of growth will be slower and that we must adjust to this challenge of change.

What I am trying to say in a nutshell is this: that the challenge of change in the 1960's implies the adjustment of business and government and labour to a new and competitive situation in which the rate of growth will be slower and the problems of maintaining full employment without inflation will tax the wisdom of business men, politicians, labour leaders and economists.

Is there an out? Yes, I think there is. The solution is for all of us to adjust to the newly competitive situation and to a new and slower rate of growth if that growth is to continue at or near a full employment position.

We must stop paying lip service to the principles in which we are supposed to believe. The challenge of change requires a display of new enterprise and new initiative. During the past 15 prosperous years labour has developed soft muscles, business has developed a soft head and both have encouraged the usual schizophrenia of government. If we are to surmount the challenge that lies before us, management must take a positive attitude. It must display the enterprise and initiative that competitive conditions, in which they ostensibly believe, call for. Management must not take the negative role of screaming about high wage costs or running to Ottawa for tariff protection when they get into difficulties. The answer is very simply to get competitive. Similarly, labour must stop thinking in terms of more and more without being prepared to give more and more. Labour must learn the hard lesson that, in the final analysis, a rising standard of living at a full employment level can only be based on the real productivity of the nation, a real productivity that requires the management initiative to which I have already referred but which also calls for a positive approach on the part of labour. Government must resist the temptation to bail out the inefficient either through measures to protect inefficient industries or measures to coddle inefficient labour. I would like to think that we have the vision to meet the new challenge of change, to maintain a rising standard of living in the light of the new competition, to maintain the democratic institutions that we have, and especially to call forth from self-interested groups a little more concern with the common interest. Canadians have met these kinds of challenges repeatedly throughout their history and I think that we can meet them again. The two necessary ingredients are a calm, objective and realistic appraisal of our future and the will to do something about it.

IV—THE OUTLOOK IN BUSINESS

By T. R. McLagan,
President, Canadian Manufacturers' Association,
Montreal, Quebec.

Mr. McLagan, current President of the Canadian Manufacturers' Association, is Chairman of Davies Shipbuilding Limited and of Canadian Shipbuilding and Engineering Limited, Montreal. He is also President and General Manager of Canada Steamship Lines and a Director of several Canadian corporations. Born in Montreal, he was educated at Lower Canada College and McGill University where he received a B.Sc. degree in mechanical engineering. After varied business experience, which included seven years as a Partner of the industrial consultant firm of Dufresne, McLagan and Associates, he was appointed Vice-President and General Manager of Canadian Vickers Ltd. in 1939. Following a period of war service, during when he was invested with the Order of the British Empire, Mr. McLagan became President and General Manager of Vickers in 1950. He is a member of the Montreal Board of Trade, The Board of Governors of Lower Canada College and McGill University, the Canadian Industrial Preparedness Association, and the Canadian Shipbuilding and Repairing Association.

IN BRIEF, the outlook for business depends on the correct answer to several questions.

First, can we contain unemployment at a period when manufacturing industry, the biggest employer in the economy, is not growing in proportion to the increase in the labour force?

Second, can organized labour be prevailed upon to recognize the utter folly, under existing world conditions, of pursuing policies which must result in still higher price tags on Canadian goods?

Third, can Canadians be wooed away from excessive reliance on imports at the expense of comparable domestic products?

Fourth, can we improve our competitive position in terms of price and quality in a thoroughly revitalized trading world that is accenting domestic industrial expansion and thus fostering the formation of a variety of economic blocs that could leave Canada in an exposed and vulnerable position?

I do not propose to consider these four questions separately since I believe—and will shortly seek to show—that they interlock. But first a few general observations on unemployment.

None of us, I believe, can be anything but concerned at the proportions of our present unemployment problem. There is considerable debate, of course, as to just how many Canadians are genuinely seeking work and are unable to find it, but we will all agree that the number is much higher than it ought to be and, indeed, need be.

This is disturbing, not only because it is not a pleasant thing to know that there are able-bodied men in this country idle for months on end through no fault of their own, but also because those of us who are spokesmen for industry, no less than those who speak for unions, have a vested interest in maintaining the highest possible level of employment.

It is appalling to think of human resources going to waste in any circumstances, particularly in a country like Canada where the chronic weakness is a crying lack of population to take full advantage of its wealth of material and natural resources.

These are sentiments I think every thoughful person will share. Why then do we find ourselves in this position?

Unemployment is a complex problem and there are several reasons why it has risen in recent years to its present worrying level, but a major reason is undoubtedly our failure to encourage the faster growth of manufacturing industry.

This is all too clearly reflected in our rising costs, our gorging on competitive imports, and Ottawa's apparent disposition to persist in a tariff policy that can be summed up in the phrase "too little and too late".

The pressure of world competition being what it is, this all adds up to terrifying irresponsibility. Despite all the warnings we have had, it would seem that, as a nation, we are still steeped in complacency.

However, I believe there is still enough time to do those things which must be done if we are to maintain our living standards.

Whether we get the better of employment or it grows worse depends to a large extent on how successful industrial management is in improving our competitive position both at home and abroad in relation to the other major manufacturing nations of the world.

As I see it, doing this means, in the first place, a renewed effort at the company level to make organized labour—and those who speak for it—much more aware of what is at stake.

They must be reminded over and over again of the consequences if wage rates and fringe benefits in this country—which are already two or three times higher than those of our European competitors—continue to outrun productivity.

If our trade union officials cannot be persuaded to cooperate with management—if they insist instead on forcing wages and fringes still higher regardless of productivity improvement—then, whether they realize it or not, they will simply be pricing their members out of their jobs. Somehow or other they must be made to understand this.

The buying public at large must be made to see that to continue to prefer foreign goods over domestic ones on the present scale is to court disaster.

Ottawa must be prevailed upon to accord domestic industry greater consideration through a more realistic and flexible application of tariffs and through the earliest possible tax reliefs.

If we accept—as we must—that price is the major factor in our present inability to match foreign competition, it follows that we must proceed along the lines that I have just indicated. Nothing less will do.

Let me now say, quite categorically, that this three-fold task of persuasion is one which must be assumed in the first instance by management. Management, I am glad to say, has already shown that it recognizes this, as witness the many utterances of its spokesmen in recent months.

No one can say that labour, the consuming public and Ottawa have not been given ample warning of the consequences which must follow from continuing as we have been doing. And the employment figures themselves are surely the most eloquent and ominous warning of all.

I think I have said enough to make it plain that my answer to the first—and all-important—question is a flat NO. We most decidedly will not be able to contain unemployment unless we provide the climate in which our manufacturing industries can flourish and expand.

We must therefore stop treating these industries as though they were expendable. They are not. They are the bedrock of productive employment and they alone can provide a sufficient number of stable and well-paid jobs for our growing national labour force. This is the central truth that Canadians must be made to realize and act on if the business outlook in the next few months and years is not to become even more overcast than it appears at present.

The answer to the next two questions, which, as I have indicated, hinge on the first, must necessarily be the same—maybe.

I think there *is* a chance that organized labour will see danger to jobs of pressing wage demands which are unrealistic and unrelated to productivity. We must certainly hope so.

And again, I think that there *is* a chance of getting across to the public at large the threat to national prosperity which is involved in the unrestrained consumption of competitive imports. However if this particular hope is to be translated into fact, influential groups in the community will have to give a great deal more support to the national "Buy Canadian" program. Here again I would suggest that the attitude of organized labour, which has so far been markedly unenthusiastic, could be decisive.

The answer to the fourth and final question is most definitely yes. We certainly can improve our competitive position in world markets in terms of price and quality provided we have the will to do so. Much obviously depends on whether the previous two questions are answered as we hope they will be. Wage restraint and the larger domestic market are important cost factors determining price, while on quality we have rarely if ever been faulted. Government can also make a major contribution to our cost problem by easing industry's tax burden and by other steps calculated to encourage enterprise.

Management, as always, has the responsibility of giving leadership in seeking out and eliminating waste; in improving the efficiency of its operations by every means open to it; and generally to provide a better product at a better price and, having done so, to show drive and imagination in selling that product both at home and abroad.

To conclude: my best guess as to the short term outlook is that it will not differ greatly from the conditions of the past twelve months. While I cannot be as unreserved optimistic as I would like to be, I am nevertheless not a pessimist at heart —which is why I remain hopeful that, evidence to the contrary nothwithstanding, we Canadians will yet reverse in time those policies which are undermining our living standards and retarding our progress.

For further reading

ECONOMIC INDICATORS: HOW TO USE THEM IN BUSINESS FORECASTING, by W. A. Beckett, *Cost and Management*, April 1960.

EVALUATING ECONOMIC TRENDS, by G. A. Gathercole, *Canadian Journal of Accountancy*, Sept. 1958.

KEY MEASUREMENT OF THE CANADIAN ECONOMY, by R. B. Crozier, *Canadian Chartered Accountant*, Jan. 1958.

GENERAL ECONOMIC INDICATORS FOR BUSINESS PLANNING, Edwin V. Klock, *N.A.A. Bulletin*, Sept. 1957.

PERSONALS

K. H. RITCEY, R.I.A., formerly Assistant Divisional Accountant and Purchasing Agent at Sea-Seald Division of National Sea Products Limited, Halifax, has been promoted to Assistant Manager and Plant Accountant at 40-Fathom Fisheries Incorporated of Rockland, Maine.

F. B. BRACKETT, formerly Divisional Accountant at 40-Fathom Division of National Sea Products Limited, Halifax, has been promoted to Office Manager of 40-Fathom Sales Corporation at Boston, Mass. Mr. Brackett is a senior R.I.A. student.

G. G. FISCH, B.Sc., was elected a Director of Bruce Payne & Associates, Incorporated, Management Consultants, of Westport, Conn. at their recent annual meeting. Mr. Fisch is Executive Vice-President and Managing Director of the company's Canadian affiliate, Payne-Ross Limited and has lectured for the Society's Executive Development Program.

V. F. DAVIES, R.I.A., formerly Director of Accounting Services for the Canadian Broadcasting Corporation, has been appointed Comptroller of the company, responsible for financial administration and accounting services. Mr. Davies is a past Chairman of the Montreal Chapter.

D. D. HICKSON, C.G.A., formerly Controller of Mead Johnson of Canada Ltd., Belleville, has been appointed Secretary-Treasurer. Mr. Hickson is a Past Chairman of the Bay of Quinte Chapter.

F. E. WOOD, O.B.E., R.I.A., C.P.A., a Past President of the Society and Secretary-Treasurer of Marathon Corporation of Canada Limited, Toronto, has been elected First Vice-President of the Ontario Motor League.

H. A. PAKRUL, R.I.A., has been promoted to Vice-President and General Manager of Atlas Titaniums Ltd., Welland. Mr. Pakrul is Auditor of the Niagara Chapter and a Dominion representative.

J. V. HENDERSON, R.I.A., has been appointed Works Accountant of the Hamilton Works, Steel Company of Canada Ltd. Mr. Henderson was formerly a General Supervisor.

V. A. WILLIAMS, R.I.A., has been appointed Cost Accountant of the Hamilton Works, Steel Company of Canada Ltd. Mr. Williams was Chairman of the Hamilton Chapter during the 1959-60 season.

R. L. MAHON, R.I.A., has joined Nova Scotia Pulp Ltd., Port Hawkesbury, as Cost Accountant. Mr. Mahon was formerly with Stanfield's Limited in Truro, N.S.

F. A. GOSLING, R.I.A., Secretary of the Winnipeg Chapter and a Director of the Provincial Council, recently received his C.A. certificate. Mr. Gosling is with S. M. Milne & Co., Winnipeg.

Support Your Red Feather Campaign

ACCOUNTING FOR DISTRIBUTION COSTS BY PRODUCT GROUPS

by Lyle M. Farmen

Lyle M. Farmen is Manager of the Accounting Department, The R. T. French Company, Rochester, New York. He is a graduate of the Harvard Business School and the College of Wooster (Ohio). He is a member of the Rochester Chapter of N.A.A.

DISTRIBUTION COSTS

IN ITS BROADEST sense, distribution includes the following functions: shipping, freight and delivery, warehousing, selling, advertising, ordering and credit. Usually selling expense and advertising are such major expenses by themselves that each is treated as a separate heading on the Profit and Loss Statement.

In a narrower sense, distribution costs mean getting the merchandise from the production departments to the customer. This paper is based on this interpretation of the term "distribution cost".

These three items of expense—shipping, freight and warehousing—should be considered under the same heading because each is interrelated with the other two. Reduction in the use of public warehouse usually means more shipping activity at the plant. Public warehouses are sometimes replaced by company owned shipping centers.

This paper is concerned with the accounting for distribution costs for control purposes and with the proper methods of allocating the costs to products. Costs need to be allocated to products for two primary purposes—(1) to calculate selling prices, and (2) to assign costs to a Profit and Loss Statement by Product Groups.

Distribution costs can, and often are, allocated to products on the basis of sales percentages. This is foolhardy because most of the distribution costs under discussion here are based on weight of product which usually has no true correlation with sales value.

The paragraphs to follow cover three phases of each segment of distribution costs, namely, (1) Definition, (2) Accounting for the cost, and (3) assigning or allocating the cost to products.

I. SHIPPING EXPENSE

The shipping function begins when the finished goods have been transferred from the production department to the shipping floor or in plant storage area, and ends when the goods have been loaded in the freight carrier.

Accounting for Shipping Costs

Shipping costs should follow the function and include the trucking and handling labor to transport finished goods from the production area to the shipping area and later to load the goods in the carrier. Building depreciation, real estate taxes and other costs based on floor area should be charged to shipping based on its share of the total area. Any in plant storage area for temporary storage, including areas in the production departments, should be assigned to shipping on the basis that production costs are concerned only with the manufacturer of goods, and where the goods are stored is a management decision and such costs should not be borne by the pro-

duction departments. Other ordinary expenses are supervision, supplies, insurance, payroll charges, and other miscellaneous expenses connected with the shipping function.

The shipping department personnel should also be charged with its fair share of service departments' expenses for its heat and light and other services it receives.

On the clerical side, shipping costs include the cost of preparing the bills of lading and other papers and reports connected with the shipping function.

Shipping costs should not include the regular packaging costs of finished goods as the packaging function is a part of production costs. In some instances, however, special packing may be required for government or export orders and these costs should be charged to the shipping department.

In the accounting system, shipping costs should be accumulated by item of expense to provide the total cost of the shipping function. If more than one plant, the costs should be maintained for each location.

Assigning Shipping Costs to Products

The assigning of shipping costs to product lines is more difficult than the assigning of production costs. Production departments are usually established along product lines to provide accurate product costs. The shipping function is concerned with all products made by the company and it is not always known how much time is spent on any one product. However, several good methods are available for fairly accurate costing.

In many respects the functions of a shipping department are the same as a public warehouse. Warehouses usually invoice storage on a square footage basis, handling on a weight basis and other expenses, such as clerical expense, on an hourly basis. Therefore, to be accurate shipping costs should be handled in the same manner. There comes a point in cost accounting, however, when a decision must be made as to how far you should go to ascertain pin point cost accuracy. If shipping costs are a relatively small percentage of total costs, the clerical cost involved to obtain accurate product costs outweighs its usefulness. Shipping costs could be broken down into three cost sub-groups, i.e., costs based on square footage, on weight, and on an hourly basis. The next job of assignment to product lines becomes more difficult, and to repeat, the cost of allocating these costs could very easily outweigh the usefulness. A solution is to assign units to each product, the units based on a product's weight and square footage or cube. Assume that Product A has been given 10 units, Product B 5 units. Total shipping costs would then be broken down to find the cost per unit and the cost then assigned to each product based on its number of units.

An easier but less accurate method is to base all shipping costs on a weight basis. Total lbs. shipped in a period is usually available, thus providing the means of calculating the shipping costs per cwt. The weight of each product is a known factor and each product is charged accordingly.

If any of the above information is not available and shipping costs are relatively small, they could, as a last resort, be assigned to products as a percentage of sales.

II. FREIGHT ON SALES

Freight on sales includes the total cost of freight to move the products from the shipping department to the customers. The terms of sale of any particular company usually determines the accounting for freight costs.

Accounting for Freight on Sales

If terms of sale are F.O.B. factory, freight on sales becomes no problem because obviously you would not have such an account on your books. Freight on sales becomes a major expense only when the terms of sale are delivered prices. Depending upon particular circumstances of any one company, total outbound freight costs could include all or part of the following freight classifications:

1. Carload or truckload direct from plant to customer
2. Carload or truckload from plant to warehouse for subsequent distribution
3. Less than carload shipments from plant to customers
4. Less than carload shipments from warehouses to customers
5. Interplant shipments
6. Air Transport

Separate freight accounts should be established for each of the above classifications, the total of all such accounts representing the total freight on sales.

Assigning Freight to Products

On the assumption of the use of delivered prices and that the same selling prices apply to all areas of the country, total freight costs will include freight on shipments to local or nearby customers and at the far extreme, shipments to customers clear across the country.

Freight bills from carriers, excluding ships, are based solely on weight. Therefore, freight assigned to product lines must be based on the weight of each product. Per the assumption stated above, the freight assigned to each product must be an average or weighted figure to include the freight cost to all customers both near and far away. Two methods are available for use.

Method 1—If the product line is large and customers are spread throughout the country, this method involves the use of some sort of tabulating equipment as the job is too large to handle manually. The steps involved are as follows:

1. Find total lbs. for each product by shipping destination. For example, this means finding the total lbs. of Product A shipped to Los Angeles, Chicago, Boston and all other major points, the total lbs. of Product B, etc.
2. Obtain the freight rate for each product for each shipping destination.
3. Extend lbs. and rates for each product for each destination.
4. For Product A, for example, add up total pounds shipped to all points, add up total freight costs and then divide freight costs by total weight to find the average rate for Product A. Repeat this procedure for all products.
5. The total freight costs per this study should agree with the freight costs per the books of account for the period involved. However, differences will usually occur and the average rates determined should be adjusted upwards or downwards accordingly.

This procedure can be simplified somewhat by eliminating the minor destinations and using only the major points.

Method 2—A simpler but less accurate method is to base the freight from the plant to the population center of the United States or some similar point depending on

your plant location. For example, if your plant is on the East Coast, past experience or studies might show that the average shipping point for your products is Indianapolis. Therefore, freight rates from your plant to Indianapolis could be representative of the average freight costs for all shipments. Under this method, the rate to Indianapolis would be used for the assigning of freight costs to products.

III. WAREHOUSE EXPENSE

Warehouse expense includes all costs incurred for the storage and handling of products in public warehouses from the time the products leave the shipping floor to when the products are delivered to the customers. This means that whether the public warehouse is in the same city as the plant, en route from the plant to point of destination, or in the destination city, all such warehouses become a part of the total warehouse expense.

Accounting for Warehouse Expense

The accumulation of all items of warehouse expense for all warehouses in one account is usually sufficient. If regional or territorial control is necessary, separate warehouse accounts for each selling region may be maintained. If warehouse expense is a major part of distribution expense, further control is necessary. This information could be done by account distribution or subsidiary records. Regardless of how it is done, the following information should be available for control purposes:

1. The cost of warehousing by major warehouse point
2. The cost of major functions by major warehouse point.

One breakdown would be by storage costs, handling costs and clerical costs. Also notations should be maintained as to the amount of sq. ft. used each month by major warehouse.

Assigning Warehouse Expense to Products

As mentioned under the section on Shipping Expense, warehouse expense and shipping expense are very similar in their assignment to products with one exception. All products are covered by the shipping function but all are not covered by the warehouse function. Many shipments move directly from plant to customer. Therefore, warehouse expense applies only to the tonnage moving through the warehouses. In addition, it is conceivable that some products are never warehoused. These conditions complicate the allocation of warehouse expense because the tonnage moving through warehouses is not a figure always available. Two reasonable methods may be used:

Method 1—Find the percent of total sales moving through warehouses, apply the percent to total tonnage to get tonnage moving through warehouses. Apply this tonnage to warehouse costs to obtain cost per cwt.

Method 2—Prepare standard warehouse costs for products by using actual warehouse rates for storage and handling of a particular product. Storage costs would be calculated for the average number of months of storage.

IV. CONCLUSION

As distribution costs take on more importance, the cost accountant must adopt better methods for their allocation to products. This paper is an attempt to suggest better ways of accounting for such costs.

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Editorial Comment . . .

A Scarce Commodity

THE following excerpt is taken from the June 20, 1960 issue of *The Manager's Letter* published by the American Management Association:

"Despite expanding executive development programs, 64% of firms replying to a recent AMA survey report they will be forced to bring in key executives from the outside within the next two years. An additional 35% say there is a 50-50 chance of their doing so.

"General management executives will be in greatest demand, according to the survey, followed by marketing, manufacturing, and research executives, in that order. A slackening is noted in the demand for engineering executives, while the demand for research men is on the rise.

"How will these executives be found? Over 75% of the respondents feel their best bet is informally, through business contacts. The next most popular methods are through executive search consultants; associations, professional societies, etc.; and advertising. At the bottom of the scale is answering 'position wanted' ads."

This report could be a very fertile field for speculation about the best way for a firm to ensure a continuous source of strong management people. The question may well be asked, "Why does industry find a short supply of able managers despite costly executive training programs?" In the August 1960 issue of *Dun's Review*, Mr. R. N. McMurry examines this problem. He assesses the relative merits of in-company and outside development programs and concludes that, for any training to be successful, it must meet eight objective standards. These standards are very significant and may be summarized: the trainee must have the necessary potential qualities, traits, and desires for the position he is intended to fill and, when adequate training methods are found, they must be concentrated on the individual and his needs. Mr. McMurray discourages the mass executive development program because, first, there are not that many men potentially able or willing to take executive positions and, secondly, the positions to be filled require different skills. This criticism

of executive development is not intended to discourage study and training. The man with enough initiative to undertake a course of study for his technical or cultural improvement should be given encouragement. However, when he has completed his formal study, every effort should be made to give him a chance to develop himself in real situations by the application of his knowledge. Mr. McMurry believes that on-the-job development may best be undertaken by adopting a tutorial or sponsor system of industry, whereby a strong executive is given the responsibility of guiding the younger protégé.

This assessment of executive training is of real interest to the directors of S.I.C.A. Over the past few years much study and discussion have taken place on the objectives and content of the proposed Graduate Studies program that the Society hopes to sponsor. Some of the main considerations in the design of such a program are: first, to avoid the production of a course without definite objectives in mind; second, in the choice of course content, to avoid emphasis on specialized knowledge, a certain amount of which the candidates must already possess. One of the major objectives of the course would be a broadening process of the individual, whereby he is given a chance to appreciate the many forces at work in an industrial economy. At the same time, it must be recognized by the sponsors of executive training courses, by the trainee, and by industry that all training and knowledge are ultimately lost unless the individual is given an environment wherein he can apply his knowledge and demonstrate his competence before moving on to greater responsibility.

It is doubtful that, even in industries where an effective method has been established for ensuring a supply of capable future executives, the practice of going outside for key men will disappear entirely. To dispense altogether with this practice would, indeed, be a dangerous policy for a company to follow. The strongest of men are subject to personal idiosyncrasies that can easily develop into company practice. For this reason alone it is desirable and necessary to go outside occasionally for the "new blood", new ideas, and the fresh approach that are so effective in exploding practices that may once have been valid but have now become myths in our changing world.

PERSONALS

E. R. PERKIN, R.I.A., has been promoted from Executive Vice President to President of Purolator Products (Canada) Limited, Toronto.

T. F. H. MEAKIN, R.I.A., has been promoted from Assistant Treasurer to Treasurer of Purolator Products (Canada) Limited, Toronto.

R. A. LAND has retired as Secretary-Treasurer of Pigott Construction Company Limited after 38 years' service with the company. Mr. Land is a General Member of the Hamilton Chapter.

ROY WALLACE, R.I.A., formerly of the Hamilton Chapter, has been appointed Cost Accountant at the Swanson Frozen Food Division of Campbell Soup Company, Listowel, Ontario.

G. A. ELLIOTT, R.I.A., President of the Ontario Society, has been appointed Secretary of his firm, Foster Wheeler Limited, St. Catharines, Ontario.

DON'T NEGLECT HALF THE COSTS

By Harold W. Fox,
Head, Management Services,
Rowe Mfg. Co., Inc.,
Whippany, New Jersey.

Distribution costs account for almost half of the sales dollar. In view of this, the author urges further extension of cost controls into the distribution area. In this paper, he describes the basic accounting techniques for distribution costs and surveys recent literature in the field, keying his statements to sources listed in the appended bibliography.

CANADA, with a high standard of living, a widely dispersed population, and an import rate exceeding 16% of gross national product, has the elements of a high-cost distribution structure.

Even in the United States, with its mass markets and less than 4% imports, the expense of distributing a product averages almost 50% of its total price. This finding will be documented in a forthcoming book by the Twentieth Century Fund. Moreover, the researchers, sifting and classifying cost data of both current and historical vintage, concluded that the almost even split between manufacturing and marketing costs has been a fairly stable proportion for many decades.

The accounting implication seems clear. Over the past 50 years, procedures for compiling and controlling manufacturing costs have enjoyed a progressive acceptance and refinement. Encouraged by his success in the plant, the accountant should penetrate into the other half of the costs, thus rounding out his service to management.

SCOPE OF DISTRIBUTION COSTS

By this time, the reader may demur that in *his* business, selling costs are only 15 or 20%. An elaboration on the initial assertion therefore seems appropriate at this stage.

The view here is of manufacturing and distribution as the two fundamental business activities (See Exhibit 1). For analytical purposes, all expenses are assigned to one or the other activity. To illustrate, the expense of the plant-costs accounting department is in the manufacturing category, while trade receivables belong in distribution. Other departments, e.g., accounts payable, must be analyzed and apportioned.

This functional approach may facilitate the integration of activities. Some firms use tabulating cards as order forms, inventory requisition, invoice, and basis of accounting summaries. The new devices—cutting across traditional cost centres—presage an upheaval in organization structures. While the transition to automatic control tools continues, an analytical system based on the functions of marketing

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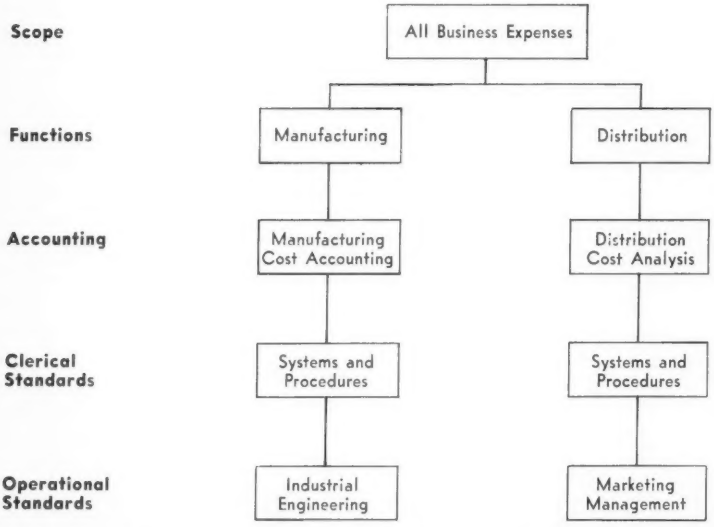
Exhibit 1.

OUTLINE OF FUNCTIONAL EXPENSE CONTROL TOOLS



and manufacturing may provide more consistency than an accounting system based on the organization chart.

Distribution cost analysis and control is systematic attention to all operating expenses after a product leaves the production line until its sale to the ultimate user is completed. Its purpose is to contribute to more profitable direction and to optimum efficiency of marketing through follow-up of established plans, timely information on actual experience, interpretation of new opportunities, and management's prompt action on these reports.

Surveys indicate that progress in the adoption of formal distribution cost analysis and control has been slow (C-1, C-3). But some companies using this managerial tool have reported very favorable results (C-2). Moreover, surveys on formal installations understate the very frequent use of distribution cost analysis in business by staff members of accounting and marketing departments. The intensity of the staff activity suggests that line executives must be preoccupied with this subject matter. Evidence supports this view (B-2). In effect, then, is a knowledge of distribution cost analysis and control as important to the future marketing manager as cost accounting is to the prospective industrial engineer? And will familiarity with both manufacturing and distribution accounting techniques be prerequisite to controllership? These are some of the questions which may well merit reflection.

Distribution cost analysis and control consists of systematic applications of suitable managerial accounting techniques, statistical procedures, and marketing re-

search information to non-manufacturing expenses.

Cost accounting contributes measurement and control of expenses through their accumulation and comparison with standards. The desired information can be developed either as part of the accounting routine or through separate statistical analyses. Under either method, statistical concepts ranging from averages to linear programming may be employed in the detail work. Marketing research furnishes external data such as potential demand and motivational differences which serve as guides to strategy and criteria of performance.

Non-manufacturing expenses are all the costs incurred after completion of production. Distribution (or marketing) functions range from storage of finished goods to collection of invoices. Marketing is treated here as putting a firm's merchandise into the hands of ultimate users, regardless of whether the functions are performed internally or externally. A business which is not "selling direct" should include all applicable subsequent channels of distribution in its audit. (One use of the analysis may be to determine whether the distribution structure is more efficient than alternative channels.) Appraised in this context, the magnitude of the non-manufacturing portion of a company's products should spotlight the accounting challenge into sharp focus.

USES OF DISTRIBUTION COST ANALYSIS AND CONTROL

Interpretative summaries tell management about the effectiveness of distribution expenditures. The information should be used both for evaluating past performance and for planning future outlays.

Analysis of distribution costs helps management in setting prices equitably throughout the line or over large groups of products. Control will help safeguard the profitableness of these prices by signalling needs for corrective actions before the situation gets out of hand.

Competitive conditions, rather than addition of manufacturing and marketing costs plus profit, are often the major deteminants of price structures. In such a case, distribution cost analysis and control is particularly useful, to uncover opportunities for cost savings or to highlight the need for product differentiation.

If prices are set by government regulation, the enterprise may have to report detailed breakdowns of the delivered costs of its different classes of service or types of goods. An analysis of distribution costs is often the key exhibit supporting the legality of a firm's pricing practices or proposals.

From a social point of view, distribution cost control furthers mass dissemination of goods and services, thereby raising standards of living and expanding economic activities. The country can benefit not only from low-cost production but also from efficient marketing.

There are many other facets of this subject. In the interest of brevity, only a few general business considerations will be mentioned. An industry with long margins always looks attractive to outsiders. Distribution cost control will not only reduce an efficient plant's vulnerability to competition; it should also promote confidence within the company. Intelligently administered accountability of personnel—in both production and marketing functions—can make the entire organization cost-conscious and productivity-minded. Even sales executives apathetic to accounting cannot dismiss the motivating power of distribution cost control.

SURPRISES, DIFFICULTIES, AND BENEFITS

The scope of investigation should be sufficiently comprehensive to arrive at the cost and contribution to sales both of existing segments and of alternative methods. A business embarking on formal distribution cost analysis can expect many surprises, difficulties, and benefits.

The surprises are likely to be painful as incredible shortcomings are scheduled for remedial action (B-3). Yet the demands on operating executives often are such that even glaring inefficiencies may escape attention until focused by analysis.

Installation of distribution cost control is comparable to the other efficiency techniques which preceded it. Remembering the limitations of time studies, systematization, mechanization, and other "scientific management" devices helps anticipate initial difficulties. Moreover, some marketing elements (particularly in order-getting) are intangible and cannot be evaluated objectively with present methods. Originality in coping with new problems is a constant necessity, but every interpretation must be commercially sound.

The struggle is worth while if it ferrets out latent benefits; it is essential if competition is already using this tool. In numerous businesses, review of distribution expenses has pinpointed opportunities to increase their yields and to effect savings. Ultimately, distribution cost studies contribute information for the direction of sales efforts and the attainment of management's objectives.

Thus, distribution cost analysis and control is a managerial tool to secure business, legal, and social objectives through evaluation of marketing expenses. A program for an effective application in business should comprise the following factors:

1. Cooperation between the accounting and marketing areas
2. Capable analysis with no other primary responsibility
3. Management's timely use of the findings

A description of accounting techniques will be followed by an example of an operational approach.

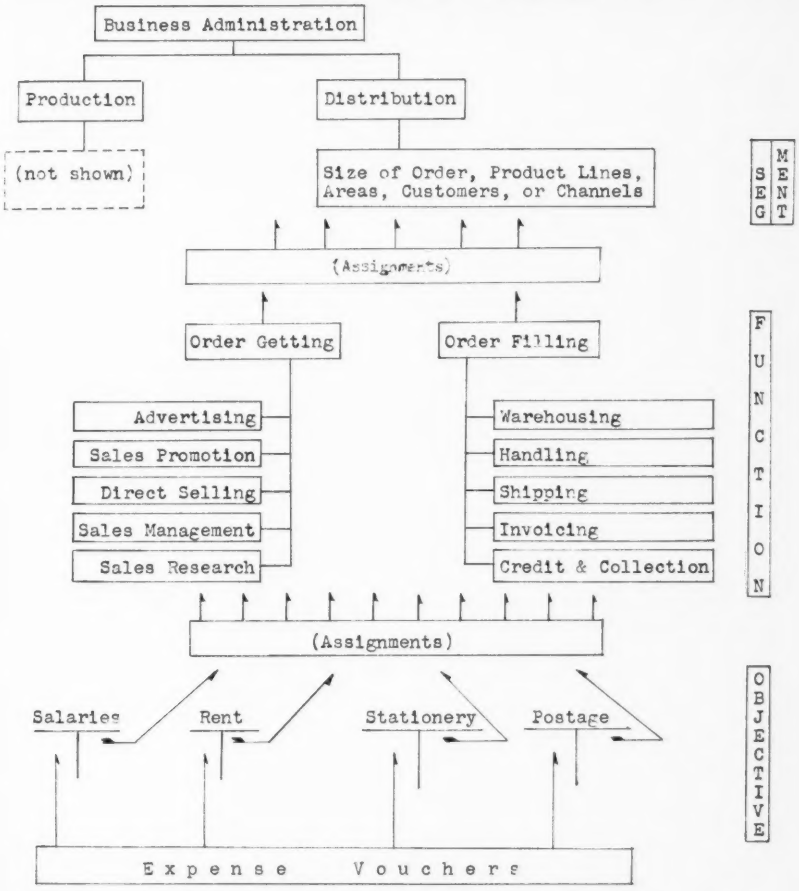
ACCOUNTING

Accounting for distribution costs requires the classification of the data according to the firm's manner of divisionalization, actual or assumed. In other words, even a business organized on a product basis may be analyzed according to territories, methods of selling, payment terms, or other segments.

The chart of accounts will also reflect the sub-segments of sales such as a products division split up according to channels of distribution. The next lower classification may be different activities of order-getting such as advertising, and order-filling such as invoicing. Such operational cost centres as advertising and invoicing are called functional accounts here. Below the functional categories are the objective accounts such as salaries and stationery. Accordingly, the accounting system provides for the preparation of statements which report the results of each sales segment's and subdivision's performance. Exhibit 2 outlines the different layers of the accounting system.

Exhibit 2

FLOW OF ACCOUNTING INFORMATION



Marketing men often ask why accounts do not relate directly to segments of sales, thus obviating the roundabout procedures. In practice, some do (e.g. salaries of salesmen in a geographical analysis according to their territories). More frequently, costs are joint as to segments (e.g. salaries of salesmen with a variety of merchandise in a product study). The order-filling activities are nearly always vested in departments whose costs are partially manufacturing overhead. For segregation of nonmanufacturing expenses, special functional cost centres are required. Next, further breakdowns disclose the portions ascribable to different channels of distribution, areas, commodities, or other segments.

OBJECTIVE, FUNCTIONAL, AND SEGMENT CATEGORIES IN PRACTICE

Initial accumulation in objective accounts is necessary to identify the reason for expenditures such as salary or stationery. Unless pregrouped in such objective accounts, the data would be unmanageable after split-up among functional accounts such as invoicing or credit and collection. For example, a review of objective accounts may show that a particular firm is overstaffed and also that stationery costs are excessive.

If management simply decreed a cut in costs of salary and stationery, it might create a shortage of personnel and paper to follow up delinquent accounts. In order to pinpoint the location of waste, the cost of the different functions must be examined. Further, for accountability purposes, either a parallel record or an allocation to departments is required if the latter do not coincide with functions.

Realistic criteria might spotlight the invoicing department as inefficient. Initial comparisons would take the form of the department's total actual cost versus the budgeted or versus last period's cost or versus the cost of alternative methods. At a more advanced stage of analysis, unit costs may provide the criterion. What is the cost per invoice—in contrast with similar work in other divisions or other companies, or compared with realistic standard cost? An unfavorable showing would not be conclusive until the total difference is resolved into controllable and uncontrollable causes. The latter are not the department's fault—they may be idle time of salaried personnel during a seasonal decline in shipments or they may be obsolescence of stationery because management adopted a new format.

The department head should be held accountable, however, for all costs which he can control. Analysis of the objective expense elements in the invoicing department may trace the unfavorable variance to salaries and stationery. Thus localized, the drain may be found to stem from improper procedures under which each bill is typed three or four times before it is accurate and complete.

Incidentally, if at the same time another department would have reduced its salary and stationery expenses, its savings would have cancelled out against the waste in the invoicing department as far as the objective accounts are concerned. Neither department's performance would have been noticed on the books if only objective accounts had been in use.

After corrective action, distribution cost control must follow through so that no new leak develops.

For use in connection with direction of sales efforts, the expenses are grouped according to segment of sales. This may allow a direct assignment of some expenses such as salary and stationery expenses incurred at a branch assigned according to territory. In such a case, the voucher can be classified directly with the appropriate objective, functional, and segment codes. On the other hand, the grouping may entail two allocations. To relate salary and stationery to product, these expenses would be allocated first according to function and then to product. The following paragraphs examine this two-step allocation in detail.

The salary and stationery costs (recorded in their respective objective accounts) would be assigned first to functions such as invoicing and credit and collection. If the personnel is not specialized by product, a suitable basis of allocation such as labor hours (expended on each of the products) times wage rates must be used.

The pro rata cost of general stationery used in different functions may be determined by requisitions or by sampling studies.

Much thought is needed to select bases of allocation which are proper yet practicable. The allocation is based either on the activity which brings about or which benefits from the expense. Unless the relationships are real in the particular company being analyzed, the conclusions of the study will be misleading.

A time study and expense analysis of the invoicing function may show that it costs four times as much to type a new bill as to add an invoice line to a bill already in the machine. If the invoicing costs are large enough to justify fairly exact apportionment, the contents of invoices must be tabulated by product, showing whether each invoice covered one or more products. (Incidentally, such a detailed tabulation may contain information valuable to the sales and shipping departments.) The share of each product among single and multi-line invoices is determined, weighted, and the cost distributed accordingly. It is usually desirable to develop individual bases of allocation for each major element within a function.

Similarly, suitable bases of allocation must be employed on the indirect product expenses in the other functions. For example, dollars of credit sales or volume of orders screened and collected might serve credit and collection.

Under the contribution margin approach, only the escapable costs would be assigned. A full accounting procedure, however, would attempt to develop not only the marginal but also the net contribution of each segment of sales. The net profit approach may yield additional facts useful to management. Furthermore, it assures that all distribution activities are scrutinized.

The result is an analysis on a product basis, for determining the financial impact of price/volume changes, new advertising or selling policies, etc. For example, a packaging change in a once profitable product may restore its contribution rate on funds employed. Accounting pinpoints the need for action on the product and projects the results of volume changes; marketing research and management proposes and implements the specific merchandising device.

The aforegoing description has sketched the accounting procedures for relating expenses to functions and to segments of sales. Accounting aims for timely presentation of accurate information, logically classified for managerial use. An isolated summary of a segment does not tell the story. It is when the information is evaluated in the light of applicable experience in other areas—sales as well as production—that the internal data become more meaningful. Furthermore, external yardsticks are needed because management has to weigh recommendations based on accounting against the demands of the market, the government, and other considerations. Administrative decisions must add up both arithmetically and operationally.

OPERATIONAL APPROACH

Application of the methods described in the last section entails four major steps:

1. Compilation and submission of the data by the accounting department
2. Decision-making by management
3. Implementation by the sales department
4. Reporting of results by the accounting department.

Selective analysis can cut short this cycle through prompt and informed attention at the point of inception. Generally speaking, accounting can be more informative on internal problems affecting an entire business; operational analysis may be in a better position to cope quickly with localized situations; and there is a large area where either approach might serve.

In practice, analysts are stationed in either the controller's or the marketing department, depending on the company. Wherever the work is based, close collaboration between accounting and sales is prerequisite to realizing the benefits obtainable from distribution cost analysis. The costliness of the procedures can defeat their purpose even if there is no overlapping. A real danger is imposition of unnecessary paperwork on operational personnel—it must be avoided!

Most businesses have so many records for other purposes that an economically minded marketing analyst would hesitate to set up a complex system for distribution expenses. There are sales invoices, payrolls, customers' complaints, salesmen's expense reports, shipping records, and myriad other raw data in the accounting department and marketing sections. Suitably arranged, these records can disclose facts in what operational executives would consider the most practical setting possible: actual market conditions.

Dynamic marketing management uses external research to put the accounting results into perspective. Comparison of actual with potential shows which products, salesmen, trading areas, etc. are below and above par. Consumer research and forecasting provide guides for investing in opportunities.

The analyses are often suggested by the major trouble spots. Heavy expenses, complaints from customers, loss in share of the market signal the need for corrective action. It may be that transportation expenses are high because of a large volume of small shipments. Some customers complain about the late arrival of LCL shipments; others buy elsewhere.

Exploration of alternative methods is required. Perhaps consolidated shipments to central distribution points combined with scheduled local deliveries is the answer. Another possibility is the establishment of warehouses from which customers can pick up their orders as needed. What are the incremental costs under each of the proposed methods? Which system do customers prefer? What are competitors doing? What will be the probable effect of the decision on future sales? All changes in expenses that substitution of one method for another would cause must be determined. The accounting department would assist with the quest for cost data (for example, overhead allocations and profitability ratios). Furthermore, the marketing analyst may conduct surveys to learn the delivery practices of others and to estimate customer reaction to a change in service.

A study of all steps in the distribution process and of new ideas, related to the findings of marketing research, can provide a direct source of productive information for efficient marketing management.

SUMMARY

While there are wide variations among types of business, on the average production is only about half the retail value of a product. The other half is the expense of conveying it to the ultimate consumer. Accountants are urged to accord each half

commensurate attention. The purpose of distribution cost analysis and control is to support management through focus on: facts for decision-making, motivation of personnel, and guidance toward the company's goal.

The accounting approach is to classify vouchers not only into objective accounts but also into operational cost centres (functions such as invoicing) and allocating them to actionable categories (segments such as distribution channels). With pertinent comparisons and interpretations, accounting can contribute a sales-supporting and profit-producing tool. For example, the spotlight on the cost and output of the invoicing activity may be the first step toward a breakdown of sales into large and small customers, and the revenue, cost, and potential of each group. Again, the analysis may stimulate a consideration of the merits of selling to retailers versus wholesalers.

On problems requiring considerable external information, the operational approach would be to use personal knowledge of the trade, results of surveys, etc. along with selected internal data as a background for tactical decisions. Here is a challenge, then, not just to ferret out expenses, but to pinpoint the course yielding the highest "value added" by marketing.

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1960 MEDAL WINNERS

John E. Goudie

William A. Mitchell

Barry H. Fox, C.A.

The Society of Industrial and Cost Accountants is pleased to announce the winners of the two national awards for high achievement in the 1960 final examinations.

Co-winners of the Society's Gold Medal for the highest mark in Canada in the Advanced Cost Accounting examination were John E. Goudie of Calgary and William A. Mitchell of Montreal. The Society's Gold Medal for the highest mark in Canada in Fundamentals of Cost Accounting was won by Barry H. Fox of London, who also won the Ontario Society's Gold Medal for obtaining the highest marks in this subject in the province.

Mr. Goudie is Personnel Assistant with Pacific Petroleums Ltd., where he is responsible for the administration of employee welfare and pension plans, employment recruitment and other personnel matters. Born and educated in Calgary, he served with the RCAF in the United Kingdom and India during World War II. Before joining Pacific Petroleums in 1956, he was employed for nine years with The Canadian National Institute For The Blind where, at the time of leaving, he was Business Manager for the Southern Alberta District. In 1956, Mr. Goudie was awarded the Alberta Society's scholarship for the highest marks in first year subjects.

Mr. Mitchell has been Assistant Comptroller of The Canada Starch Company since 1959. A native of Scotland, he served in the accounting branch of the Royal Air Force for 5½ years before coming to Canada in 1955. Prior to joining his present company, Mr. Mitchell was employed as Assistant to the Secretary-Treasurer of Barwick & Sons Ltd.

A Chartered Accountant, Mr. Fox has been employed as Division Controller, Electrical Products Division of Minnesota Mining and Manufacturing of Canada Limited, London, since May 1960. Born and educated in Toronto, he articled with Wilton Eddis and Company, Chartered Accountants, receiving his C.A. certificate in 1958.

The Economic SCENE . . .

by W. Allan Beckett

CANADA'S UNEMPLOYMENT PROBLEM

THE Canadian economy faces a serious unemployment problem this coming winter. By mid-summer the absolute number of job seekers had risen to levels not witnessed since before World War II. That is to say, July and August registered the highest figure for those months since the summer of 1939. Put another way, the seasonally adjusted level was the highest since probably the winter of 1939-1940. Unemployment is seasonally low in the summer and the indicated rate for the coming winter will be close to one million.

As a percentage of the labor force, of course, the situation is not as dark as these absolute comparisons suggest. In July, for example, 6.7% of the labor force were seeking work, after allowing for seasonal factors. The comparable 1939 figure would be in the neighbourhood of 12-15%. Still, 6 to 7% is a relatively high unemployment rate; it departs disturbingly from the economists' rule of thumb of 3% at relatively full employment. And it is the greatest degree of under-utilization of our human resources we have experienced in the past 15 years.

What has caused this unemployment situation? What can we do about it? To answer these questions we must know what different kinds of unemployment there are and how each arises.

One classification divides unemployment into a seasonal component and a cyclical component. Canada regularly experiences wide swings in the number of job seekers within each year as a result of climate and other factors. These produce fluctuations in employment in construction, transportation, trade and other industries. Despite efforts to counteract seasonal unemployment, it has tended to become more pronounced as our seasonal industries, particularly construction, have increased in importance.

Seasonal unemployment is a short term problem. Most workers are at least partially protected by unemployment insurance. In times of full employment, seasonal peaks do not normally constitute a serious situation. It is when seasonal unemployment is superimposed on an underlying high level of job seekers that more difficult problems arise.

Thus cyclical unemployment, associated with the decline in economic activity in the business cycle, is regarded as a more pressing problem. Cyclical unemployment stems from the failure of total demand to evoke a high level of production and employment. This kind of unemployment usually rises and falls in concert with recession and prosperity, but it can become chronic if demand remains inadequate, as it did in the 1930's.

For most of the post-war period cyclical unemployment has been of modest proportions. Our recessions were slight pauses on a strong growth trend and total demand weakened only temporarily. The traditional weapons of fiscal and monetary policy, coupled with unemployment insurance and other social security measures, have been sufficient in the past to moderate both the economic and hardship incidence of cyclical unemployment. Since 1956, however, the Canadian economy

has not been able to reach full employment. A re-examination of the problem and a search for new remedies may have to be found.

In this connection, one or two spurious arguments about unemployment should be discussed and rejected. Some observers refer to technological or structural unemployment. This results from the introduction of new technology (automation) which reduces total labor requirements in a particular situation or displaces certain skills. In an aggregate sense such developments can produce some short term displacement of jobs. But generally, more efficient ways of doing things make us all better off and, in a full employment situation, displaced workers can find new jobs. Usually rapid technical advances are associated with high levels of employment as in the 1920's and 1950's, and slow rates of technological growth with high rates of unemployment as in the 1930's. In short, technological unemployment is not generally serious in the absence of significant cyclical unemployment.

Of course, in the particular case, where automation does away with a particular skill, technological unemployment may be permanent for the individual unless opportunities for retraining and re-location are available. Such possibilities are, again, more prevalent when employment levels generally are high.

A second line of reasoning states that high wages cause unemployment. Again, in a particular case (as in any specific market), a high price may negate a sale. Individual workers, baseball players are a good example, may fail to land jobs because they want too much money. But the proposition will not hold in the aggregate. Wages are incomes as well as costs. And if cyclical unemployment exists, it is because the demand for goods and the incomes on which such demand is based are deficient. This is an argument for higher, not lower, wages. It might also be noted that periods of high wage levels are periods of full employment and that low wages and unemployment usually go together. Finally, as one of my former professors used to observe, you can create an unlimited demand for labor by reducing the price to zero.

Two other approaches, immigration and import competition, are related. In the one case, it is held that immigration causes unemployment by adding to the labor supply. Once more, this can be documented in the individual case. But in total, immigration contributes at least as much to the demand for goods and services, and hence to the demand for labor, as it does to the supply. Moreover, we again find the familiar pattern of high immigration with low unemployment and restricted immigration during periods of high unemployment. The absolute level of population and its rate of growth are related to employment levels but only in a relative sense and through the mechanism of supply *and* demand.

In the other case, it is held that low priced imports, usually emanating from low wage countries, restrain Canadian production and lead to unemployment. This neglects the fact that the main source of Canadian imports is the United States, a *high* wage country. But more important, it neglects the fact that low priced imports raise our standard of living. The protectionist answer to import competition would not strengthen the economy and sustain employment levels. Rather it would foster the development of high cost industry and render Canada more vulnerable to the impact of cyclical or chronic unemployment. In the case of individual industries or products, of course, shifts in the terms of trade create dislocations. But these are solved more easily when the over-all employment level is high.

Canada's unemployment problem has posed a serious threat to the economic health of the nation, only when it stems from the failure of the system to generate enough demand to keep resources employed at a high level and rising level. Seasonal unemployment, technological unemployment, dislocations caused by competition from abroad or from sudden waves of immigration—all have a mild incidence at or near full employment. To suggest that these are the continuing causes of our failure to operate our economy at full capacity is to adopt a negative approach. Policies based on these fallacies are doomed not only to fail, but to exorcise an already difficult situation.

The current unemployment situation is grave and it will probably be critical before the recession runs its course. Measures to stimulate domestic consumption—such as tax cuts—will do more to alleviate the situation than measures to restrict the supply of foreign goods or people.

PAYNE, PATTON & PUGSLEY

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ACCOUNTING AS A ROAD TO MANAGEMENT

By F. Judson Snell,
Chairman, New Product Committee,
Minneapolis-Honeywell Regulator Co.,
Minneapolis, Minn.

What are the basic things a manager must know and do to be successful? This article sums up the eight essential traits of management and assesses the value of the accounting department as a place to acquire them. Where the accounting department falls down as a training ground, he suggests supplementary ways and means of developing management skills.

THERE ARE many definitions of management but two key questions should provide a framework for what follows. They are: "What does a manager need to know?" and "What must he be able to do?" In answering these questions, let's look at four areas of knowledge and four skills (the four-by-fours of management). Together these make eight directional markers we must find if accounting is to be a road to management.

WHAT DOES A MANAGER NEED TO KNOW?

I cannot possibly come up with a complete list of what a manager needs to know in any particular business, but I can set forth four areas of knowledge that management generally has to possess. First, a manager must know the people of the organization. Second, he should have a fairly detailed knowledge of how the company is organized. Third, he should understand the financial structure of the company. Fourth, he should have a good understanding of departmental philosophy, policies and methods.

When we talk about knowing people, there are several things which come to mind. First, a manager should have a good working relationship with the key individuals in order to communicate with them. Knowledge of an individual develops trust. Trust develops into good communication. Then, it is important that a manager understand the differences in groups of people. A manager must know that engineers as a group are different from salesmen in some respects, that accountants are different from factory management people, and so on. Further, a manager must have an intimate knowledge of the key people in his organization. He must know individually what they can and what they cannot do.

The second of the four things a manager must know is how the company is organized. This needs no further amplification. Suffice it to say that it would be very difficult to manage anything without understanding the channels of communication and organization structure behind it.

We mention finance as the third of the four areas of management knowledge.

At present, Chairman of the New Product Committee, Mr. Snell has held various positions with Minneapolis-Honeywell since 1942 and has had experience in procurement, production control, factory management, sales administration and financial planning. He was born in Chicago and attended Eastern Illinois College. A member of the National Association of Accountants, he has been an N.A.A. and N.S.B.B. speaker on many occasions and a seminar leader on financial subjects for the American Management Association.

This, too, needs no further explanation. The importance of understanding the financial structure, the financial policies and goals of a given company is obvious.

The fourth point—the philosophies, the policies and the methods—is not so clear. Perhaps it can be explained best in this way. Many accountants have suffered the fate of having a "figure hater" appointed to a management position. They have worried about what his lack of knowledge of accounting activities, philosophies, policies and procedures would do to what they considered a good system. They have been concerned also about their probable lack of opportunity to make improvements in this system. This is so solely because somebody with no knowledge or interest in the profession has taken over.

This works in reverse too. If an accountant were appointed to manage without prior grounding in the basic policies, philosophies and methods of engineering, sales or factory production, the result would be just as bad.

WHAT MUST A MANAGER BE ABLE TO DO?

Let's proceed now from what a manager must know to what he has to be *able to do*. Primarily, he needs four skills: analytical skill, contact skill, decision-making skill and proctoring skill. Each of these will be explained separately.

The first one, analytical skill, is demonstrated by a complicated problem that can be solved only by one able to THINK in terms of many factors. This is a reflection of the ability to think. Certainly it is an extremely important skill that a manager must have. It is going to become *more* important in the future. As electronic data processing expands, the whole process of management will be upgraded in the professional sense. As a result, analytical skills are going to be a "must." People without too much brain power who have been successful managers in the past are going to fail.

The second, contact skill, refers to the ability to get people to do things. The ability to get people to buy, to take charge, to put budgets together, to train others (this involves teaching, appraising and delegating), can be thought about in terms of a very delicate balance between *two points*. These points are maintaining people's *respect* while obtaining their *cooperation*.

Getting people to cooperate is to make them want to please you. However, it is easy to be soft (or to be cooperative in order to gain cooperation) to the point of losing respect. It is universally true that a good manager never sacrifices respect in order to gain cooperation. With the proper balance of these two elements, he is able to be successful in contact work.

The third category is that of decision making. This is rather difficult to think of as skill and easy to confuse with analytical work. We are talking here about decisions —when to cut off an engineering program, when to fire, and when to hire. Willingness to make a decision is perhaps, the starting point. We have all known people who failed to go on in management because they just couldn't make decisions. One element of this skill is learning to enjoy the thrills, chills, and occasional spills, of decision making. There is another element—business intuition. This results from a vast amount of experience that enables a person to make a decision almost as a hunch. We think of them as hunches, but actually some decisions are the result of the memory of past experiences affecting the mental process.

One of the most dramatic demonstrations of business intuition I have witnessed

occurred shortly after we acquired a company. The sales manager decided that the existing sales force of 14 salesmen should be increased to 44 men, an increase to over 300% of what it had been. How did he know that this was what should be done? This hunch, based on years of experience, proved of immeasurable value to the company.

The younger men become impatient. They think they are ready to become managers. They are not aware of the experience factor in decision making and therefore do not consider it important. Nevertheless, it is very important.

John Handy, president of Handy Associates, points out that the making of good decisions—of having good judgment—is the thing that separates the men from the boys. Many people are perplexed by a young man who burns up the course for ten years and then, at the age of 32, levels off. Mr. Handy speculates that there are many bright young personalities with plenty of zip, fire and brain power who go through the first ten years of business life in good shape. However, when they reach the point where they have to make many judgments and decisions on their own, they find this particular ability is lacking. More managers fail for want of this skill than any other.

"PROCTORING SKILL"

Now we arrive at the fourth management skill which, for lack of a better term, I have called "proctoring skill." This is a particularly hard skill to define. On other occasions I have called it "administrative skill", but as everyone has his own definition of this term, it doesn't quite communicate the present meaning. Good work habits serve to illustrate a good part of this proctoring skill. To be well organized, to be well ordered (it is no accident that the higher you go in organization, the neater the desk seems to get) is an example.

The importance of being well organized can be pointed up in a still different fashion. The risk of *not* being well organized is simply this; you risk doing the things you *want* to do rather than what you *should* be doing. It is painful to see so many people with talent failing to perform in the eyes of management. Often the only reason they fail to do so is that they are working on what they want to instead of what they should work on.

Proctoring also includes the many tricks or skills of administration, the management by exception theory, the control tools that can be developed, the art of delegation, a person's conceptual ability (the ability to see the ramifications of a given situation so that forces can be set in motion to bring about a solution).

There we have it—the four basic skills—contact skill, analytical skill, decisions-making skill and proctoring skill.

HOW THE ACCOUNTING DEPARTMENT MEASURES UP

Now, let's take a look at the four kinds of knowledge and the four skills (the four-by-four of management) and see where the accounting department fails to stack up well as a place to acquire them.

We can eliminate immediately the financial structure of the company. There is no question but that accounting is the one place to acquire this particular bit of knowledge better than in any other department. Organization, too, can be by-passed. Surely it is impossible to make an account distribution without understanding the

organization of the company. This becomes especially true as the company gets into responsibility accounting, budgeting or planning.

So let's proceed to the third item—knowledge of people. What kind of place is accounting to get to know people? It can be pretty bad. Not too many years ago, I was on the outside of an accounting department looking in. From this vantage point it seemed almost like a leper colony. Accountants stayed together in everything they did. They lunched together, bowled together, golfed together, rode to work together, and drank together. It is not hard to understand why they didn't get a chance to know other people. Remember, we are talking about three things; 1) knowing people as individuals, 2) knowing people as different groups, and 3) knowing what people can and cannot do.

Before we see what can be done about this, let's see how it affects the fourth point—departmental philosophies, policies and methods. We often refer to accounting as the "hub of the company." We say, "Here you have a chance to find out what is going on everywhere, since you see all the vouchers and expenses. You really know what is going on because you are forced to know what account numbers should be given all these activities."

Aren't we fooling ourselves a bit when we say this? Let's ask the question somewhat differently. Do our managers know where the cost of pencils belongs in our accounting structure? Certainly not. Surely this is not a part of the departmental philosophy and policies and procedures. Obviously, when we get into the matter of setting up new accounts and debating the handling of some particular expense, we do have an opportunity to learn more about other departments. This is also true when we are called upon to explain something in our financial statements and even more true when we participate in budgeting or planning activities. However, you can't really understand the philosophy, policy and methods employed in the various facets of the business from the minutiae. You need a very intimate acquaintanceship with the individuals who determine these things.

Lastly, let's think about a specific thing that can be done to improve our knowledge of people and of the departmental philosophy, policy and method in other areas. You already have a hint of what this is. I think accountants should stop going to lunch together. It isn't hard to line up others. There are few individuals who don't enjoy going out to lunch and talking about their particular problems. For example, a sales manager loves to expound on how a sales department should be run, on the shrewd policies and clever methods they have. This is just the nature of people.

A planned lunch program would do a great deal to help accountants acquire "outside knowledge." In discussing people, we said you must know key personnel as individuals. What better way to know them than by lunching with them, golfing with them, and riding to work with them?

Another program might be developed to increase this kind of knowledge. Four years ago a group was organized in our company which called itself a "study group." One person was picked from each of the major parts of business—from sales, advertising, factory management, accounting, engineering, and so forth. We organized ourselves to study broad management problems. This enabled each of us to see how his opposite number from some other area would tackle a problem. In observing other approaches, a great deal of knowledge should be forthcoming.

There is no limit to what can be done through such a group. Other study groups have started up since then—a group of company officers have even taken up a few projects. At the other extreme, it can be extended to the first level of administrative personnel. There is absolutely nothing to prevent a new employee in the accounting department from organizing his fellow juniors in sales, production control, or inspection.

Speaking from personal experience, this is not only valuable in acquiring a broader background but it is also a lot of fun. These things are done in our company on an off-hours basis. We meet at lunch, evenings or Saturday mornings.

Another valuable opportunity that exists is in private study. Do not confine yourself to accounting literature but read management magazines and those articles written for sales managers, engineering managers and for advertising. This will give you a much better base from which to tackle this business of going out to lunch with others, because you will have some questions to ask them. This matter of broadening one's kowledge cannot be over-emphasized.

Why are so many treasurers non-accounting people? Is it because so many accounting people have had to learn their accounting in their formative years, working endless hours in their spare time? Consequently, they have not broadened themselves to a point where they can carry out a high management position.

So much for the four things that management must know and the ways that accounting helps a person to acquire that knowledge.

ACQUIRING THE MANAGEMENT SKILL

Let's move on to the four management skills. Several of these skills can be crossed off right away because accounting does furnish opportunities for the development of these skills as well, if not better, than anywhere else. The first one that comes to mind is analytical skill. I do not know of any place where people think more clearly and with greater brain-power than in our accounting department. They *are* able to concentrate on very complex problems and come up with very rational solutions.

Decision making also can be crossed off because of the objectivity of the accountant and because, in accounting, a great deal of practice is acquired in this. We *do* learn by doing.

If there should be a problem of not being able to make a decision, a person can find various kinds of exercise to sharpen up the decision-making ability. From my personal experience, I would recommend such activities as basketball refereeing. I also took the job of justice of the peace. However, I am not sure I would want to recommend that one.

Let's move down then to proctoring—the ability to manage or administer. This, too, can be crossed off for I have yet to meet any group in our organization superior to accounting in this skill.

This leaves but one of the four management skills—the contact ability, or the ability to get people to do things. Accounting must not be a good training ground for this, because this is the area where accounting people fall down. They are not particularly good at selling, teaching, or training. What can be done about it? First of all, you begin to study people in the same way you studied accounting. Studying people in terms of knowing what they will do in a given situation is a healthy, exciting occupation (it is even as exciting as studying the method of depreciation). You

will enjoy it and it is the first step in developing contact ability.

Opportunities to supervise should be given those wishing to develop this skill. Most accounting departments have some rather menial clerical tasks performed by groups of girls. The supervision of this kind of activity is not sought out by accountants. They say they would prefer a more complex assignment. Perhaps the real reason is that they are unwilling to give up the "comforts" of accounting for the trials of supervision—the basic training of management development.

Also, experiences in selling tend to develop this skill. Accountants ought to be begging charitable organizations for opportunities to solicit for them. Teaching, too, helps develop contact ability. Our chief accountant has developed a course in "financial training for non-financial executives." Any accountant can do the same and improve his ability to be effective with people.

The finest "outside" opportunity to develop this skill is an administrative capacity in a community organization, in Church, PTA, scouting or similar organizations. Here lies a valuable opportunity to gain experience in getting people to do things and increase contact ability. This in itself *is managing*. Other skills such as analytical skills, decision-making skills, and proctoring skills are also developed in an activity of this kind.

Several studies have been made of the kind of college people who end up as successful businessmen. Universally, one point seems to be an indicator of success. This over-riding consideration is successful extra-curricular experience even without a spectacular academic record. It is no coincidence that many people who have had successful administrative experiences on campus have enjoyed a good management record.

Adding all this together, we see accounting as a good training ground. I believe it to be the best. This view is substantiated by many top executives who are looking harder than ever at accountants as general management timber.

Accounting, therefore, *is* a good road to management, but *you* must recognize the "pot holes" and *you* must fill them in.

For further reading

ROAD TO MANAGEMENT, by W. C. R. Jones, Cost and Management, March 1959.
HOW WE TRAIN OUR ACCOUNTANTS TO THINK LIKE MANAGERS, by L. W. Brummer, N.A.A. Bulletin, April 1959.
THE ACCOUNTANT-MANAGER—WHAT HE IS AND DOES, by John Hihn, Jr., N.A.A. Bulletin, June 1959.

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TOPICAL comments

LOOKING AHEAD

An acute shortage of mathematicians—especially those with doctoral degrees—threatens American business and industry in the next few years. An estimated 10,000 Ph.D mathematicians will be needed for computer work alone by 1963 but only 5,000 are now available and only about 1,000 more are expected to graduate by then. The reason for the shortage is attributed to greater demand caused by automation, growth of computer centres and increased emphasis on research. *(M.S.U. Information Services)*

Employee bonus plans are fast disappearing according to a recent business survey. Of 23 companies checked, only 12 handed out bonuses of any kind while three of the remaining companies had recently dispensed with bonus plans. An earlier study of 187 companies indicated that more than 16% of U.S. corporations had scrapped their Christmas bonuses. The trouble with bonuses, personnel directors explain, is that employees tend to view them as "something coming to them" rather than a reward for job performance. *(Ind. Relations News, Sept. 29/60)*

West German GNP will reach an estimated $61 billion this year, exceeding Britain's for the first time since 1945. West Germany, which passed Britain in exports and in reserves of gold and foreign exchange last year, now rates second among the economic powers of the Free World *(Bus. Week, Aug. 13/60)*

OF GENERAL INTEREST

The top executive of a European company only makes from 45 to 75% of the salary his American counterpart makes, but European executives can count on greater job security, more status recognition, and a host of attractive fringe benefits. Built-in enticements in European countries range from substantial pensions, long vacations, and liberal expense accounts to such extras as interest-free housing loans, club memberships and chauffeur-driven company cars. *(Bus. Week, Aug. 13/60)*

Sales finance companies handled a record $1,258,203,000 in retail credit in Canada in 1959, some 10.9% more than in 1958. Totals were higher for both consumer goods and commercial and industrial goods *(DBS, Sept. 9/60)*

Air conditioning in offices improves productivity 9.5%, a U.S. Government study shows. Some studies show that it also improves dispositions, which is probably attributable to the lowered blood pressure, pulse rate and temperature that air-conditioned hospitals report for their patients. *(Precis)*

Hours of Work in West Germany, long considered among Europe's longest, have pretty well dropped to a par with other European nations in the past four years. The German working week has shortened by almost 2½ hours since 1956 while the corresponding decrease in Switzerland has been just over one hour and in France

and Holland about 30 minutes each. Here are comparative figures on the average weekly working hours:

(DEUTSCHE BANK TABLES)

	Great Britain	Western Germany	France	Nether-lands	Switzer-land	United States	Japan	Canada
1959	45.9	45.7	45.0	—	46.6	40.3	50.5	40.9
1958	45.4	45.7	45.0	49.0	46.8	39.3	50.2	40.2
1957	45.9	46.5	45.7	49.0	47.4	39.8	50.2	40.4
1956	46.0	48.0	45.4	49.5	47.7	40.6	50.2	41.0
1955	46.4	48.8	44.8	49.5	47.7	40.7	48.4	41.0
1954	46.2	48.6	44.6	49.0	47.7	39.8	48.5	40.7
1953	45.8	47.9	44.2	49.0	47.7	40.5	48.4	41.3
1952	45.4	47.5	44.0	48.5	47.7	41.0	48.2	41.5

ON THE PERSONAL SIDE

Some tried-and-true economic truths might well be emphasized in evaluating the socialistic state. These are:

- Governments cannot give to the people what they do not first take away from people.
- You cannot multiply wealth by dividing it.
- You cannot legislate the poor into economic freedom by legislating the wealthy out of it.
- That which one man receives without working for, another man must work for without receiving.
- Nothing can kill the initiative of a people more quickly than for half of them to get the idea that they need not work because the other half will feed them, and for the other half to get the idea that it does no good to work since someone else receives the rewards of their labors. *(Kitchener-Waterloo Record)*

Women in business should be treated differently from men says a recent report. Problems with women employees stem from managerial failure to recognize this and act accordingly. With women now comprising one-third of the work force, employers may have to revise some long-standing practices and prejudices against women. Here are some pointers for fitting women productively into business:

The general belief that women, as well as men, prefer not to work for women is not necessarily true. Women have been employed successfully as supervisors in such industries as retailing and telephone utilities and this experience would seem to warrant their use in other industries.

Do not underestimate the more mature woman worker. Labor studies indicate that the steadiest and most reliable pool of women workers is the over-35 age group, especially women age 45-54.

Since a majority of women workers belong in the part-time group, more flexibility in arranging hours of work would utilize more fully this group of often highly-skilled clerical personnel.

Women are more sensitive to criticism and haven't been trained to take their jobs as seriously as men do. Therefore, a good maxim to remember is "Men can be ordered, women must be persuaded." Women also respond more readily to personal attention from supervisors. *(Ind. Relations News)*

VARIANCE REPORTING FOR MANAGERIAL CONTROL

A Critical Case Study

By Donald J. Ross,
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By assigning responsibility for variances to certain elements of the organization, variance reporting provides a powerful motivation to correct sub-standard performance. A critical study of such a reporting system in action, this paper illustrates the application of general control principles and provides some insight into the managerial and accounting relationships involved.

Introduction

THE MANAGERIAL USE OF VARIANCES

AS THE MODERN industrial organization grows in size and complexity, the problem of managing becomes more difficult. If top management makes decisions, there must be some means of obtaining the information needed. If decisions are delegated to lower levels of management, there must be some means of communicating organizational goals and objectives to these levels. Even direct visual and physical contact with operations must often be supplemented by more formal observations. In all cases, there is need for reviewing performance in relation to organizational plans, a need for control.

The control process in an industrial organization involves the establishment of standards, the appraisal of performance, and the correction of deviations. Systems reporting cost variances from standard are widely accepted means for achieving control. Standards serve two functions: (1) goals for operation, (2) means for measuring performance. Reporting variances works for both direct and indirect control. Variance reports provide a basis for action to correct sub-standard performance. By assigning responsibility for variances to certain elements of the organization, they serve to motivate these elements to take action.

The operation of such a control system in dollar terms requires the participation of accounting personnel as well as line management. The accounting department is usually instrumental in designing the report system and in establishing the standards. Accounting personnel prepare and issue the reports. They may also do some analysis and interpretation in terms of financial consequences. Management is primarily responsible for the interpretation of these reports in physical terms and for determining the appropriate action to be taken.

In much of the literature concerning cost variance reporting systems the emphasis has been on the mechanical features of the systems; little has been said of their

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effects upon operating procedures or managerial relationships. This study illustrates the application of general control principles and provides some insight into the managerial and accounting relationships involved.

It is a study of the general features of the system used in one company. Detailed analysis is restricted to one manufacturing division of the company in an attempt to gain depth in insight. The focus is on managerial responsibility at the division level.

The company, with 3,000 to 4,000 employees, is engaged in commercial manufacturing and has annual sales of about $50 millions. Finance and manufacturing are two of the four main organizational units of the Company reporting directly to the President. Finance, headed by the Vice-President and Treasurer, includes the Accounting Division, which is organized into Factory Accounting and Central Accounting. Division Accountants report to the Factory Accountant. The position of Controller reports directly to the President. Manufacturing, headed by the Works Manager, is organized by product line divisions. It also includes a Personnel Division and a Planning Division. The divisions are organized by departments, each supervised by a foreman who may report to an intermediate level—the Department head.

THE PROCESS OF COORDINATION

If an organization is to function effectively, it must have a detailed plan of operation as well as established procedures for certain activities. If coordination of organizational units is to be achieved, three steps must be followed:

> (1) the development of a plan of behavior for *all* the members of the group (not a set of individual plans for each member); (2) the communication of the relevant portions of this plan to each member; and (3) a willingness on the part of the individual members to permit their behavior to be guided by the plan.[1]

A carefully drawn plan can serve as a means for measuring performance as well as a positive goal for the organization. Hence it can play an important part in two stages of the control process.

GENERAL SCHEDULES

There are two phases in the operating plan—one is concerned with the volume of operations and budgets, the other with performance standards. The former begins with commodity business forecasts originating with the field sales organization. These forecasts cover a three-year period but the principal focus is on the coming year. The estimates are summarized, reviewed, and revised by product line managers of the merchandising organization. A marketing committee of top management works with these estimates until they are satisfied that they have a proper sales forecast. Factory management then reviews the plans to determine expected production requirements and to criticize them from the viewpoint of facilities available. The planning division interprets the final sales budget for manufacturing divisions and gives this information to the division planner. This planner must gain factory acceptance of the planned work level and of the tentative schedule. The divisional aspects of budgetary planning will first be discussed and then the establishment of operating standards will be considered.

[1] Herbert A. Simon, *Administrative Behavior,* 2nd ed. (New York: The MacMillan Company, 1957), p. 106.

BUDGETS

The sales budget produces a plan of operating hours which provides the basis for budget preparation in each manufacturing division. The producing department budget is the core of this budget system. The division accountant prepares a budget for each department in the division for the following items: (1) Indirect labor; (2) Training; (3) Errors; (4) Mechanical division expenses; and (5) Miscellaneous expenses. The accountant usually assumes that requirements for the coming year will be similar to those of the present year. Up to 80% of this budget may be for indirect labor including supervisors, adjustors, inspectors, shippers, stockmen, clerks, and utility men. The training budget provides for training new personnel or for teaching present members of the work force a new job. In some departments of certain divisions this, too, may be important. If a job must be reopened once it has left the department because of a departmental error, all of the additional expenses incurred are charged to the error account. An allowance is made for this in the budget. Mechanical division expenses are budgeted amounts in each division for work which must be done by the mechanical division, such as the maintenance and repair of machinery. In addition to these items, overtime is budgeted by the works manager in accordance with the expected divisional requirements.

This list of budgeted amounts is first discussed with the foreman, and revisions may be made to cover expected personnel changes or raises. At this point it may be considered the proposed department budget. The department heads and the division manager review the proposed budgets for each department. They may revise the budgets or incorporate changes to conform to alterations in plans. Divisional expenses are then included with the department budget for the coming year. A meeting is held by the works manager with the factory accountant and each division manager and division accountant. This is the final step in budget review. Here the factory accountant may play an important role in controlling and coordinating the budgets. He checks the budget to see if it seems reasonable and is compatible with past experience in regard to the number of people included, the total expenses budgeted, and the rate per direct labor hour. But the works manager is the final authority and he must accept the budget before it becomes effective.

Departmental responsibility includes performance on direct labor, material usage, and budget performance. The dollar amounts covered by the producing department budgets are relatively small in comparison with the cost of materials or direct labor. But the budget may be the principal item over which the foreman has significant control. Indirect labor, the largest part of the budget, is the subject of most of the budget discussion. Once this is budgeted, it is usually handled as completely variable in the accounts, although actual managerial practice on this may vary from division to division.

Departments are credited by burden centres (a group of similar machines) with a standard "Lx" (labor and overhead) rate for the work they perform. The overhead portion of the rate is developed for burden centres by the division accountant. The rate includes (1) producing department budget charges, (2) divisional expenses such as supervisory salaries, (3) miscellaneous amounts, and (4) "service charges" for general factory expenses and overhead. The department is held responsible for only departmental expenses.

STANDARDS

Materials and direct labor are not budgeted but are measured by manufacturing standards. Almost all of the work in the division studied is produced to order, yet standards have been established for most operations. In the company, standards are used for two basic purposes; (1) A target and measure of performance; (2) The basis for estimates and price quotations. The first purpose is cost control; the second, pricing. Material standards are applied to product units and a standard labor and overhead rate is developed and applied by burden centres. The cost basis for these standards is revised annually by the factory accountant and the division accountants.

Materials

The establishment of material standards is not unusual and it does not normally receive much attention from manufacturing management. A standard allowance for waste is developed for each operation and the appropriate quantities are issued in accordance with this allowance. The department is charged by the standard and receives a standard credit. Although materials are a major portion of total manufacturing costs, the primary responsibility for material cost control within the specifications rests with the purchasing department. Price variances are much more significant than usage variances.

In one of the primary departments material charges are determined by weight, and credits by area of finished material. Differences in the weight of the material per square foot require different conversion factors. Sample tests are made to determine the proper allowance for weight variations. With a daily material turnover of between $15,000 and $20,000, very slight measurement errors may affect departmental performance significantly.

Book inventory figures, which are checked once each year, provide the primary means of control for materials. This procedure may be supplemented occasionally by spot waste studies.

Labor

Labor standards are far more complex and receive much more attention. The percent efficiency in cost, the standard by which departmental performance is measured, will be called the labor standard. The incentive standard for pay purposes will be referred as the base rate.

Most workers in the company are paid on an incentive system. The rate setting department of the personnel division has established incentive base rates or efficiencies for almost all work. If an operation is to be performed several times or for a long period of time, engineers apply the techniques of time and motion study to determine the base rate. Rates are set so that a good man working efficiently should produce at 140% of base. Once the rates have been established, they can be changed only if very significant job changes occur. As a result of the inaccuracies of the techniques and of job modifications over time, good performance on one job may be at 170% of base, on another it may be at 115%. Incentive bonuses are proportionate to base pay and vary with efficiency. It is a decreasing bonus system whereby the worker receives half of the percentage increase over base relative to actual work efficiency. Thus if a man works at 125% efficiency, he will receive a bonus of ½ x 25%/125% x base pay or a bonus of 10% of base pay. Since this is a decreasing bonus, many workers feel that it is not

worth the effort to achieve efficiencies greater than 140%. Increases in base pay may be granted to individual workers if they show a sustained improvement in performance. Thus there is a double incentive in effect—the bonus and the increase in base pay.

The percent efficiency in cost, the labor standard, is set by the division accountant for each burden centre. The controller stated that the percent efficiency in cost shall represent the best performance consistently achieved by the burden centre at any time in the past.[2] This then is the criterion for establishing standards. Each year the division accountant reviews the labor standard. Cost revisions are normally made at this time. The percent efficiency in cost may be discussed with the foreman or the division manager. If the division accountant and the division manager cannot agree on the percent efficiency to use in cost, the dispute is taken to the controller.

Time established in this manner is charged at a base rate representing the average for the work force in the burden centre. If the composition of the work force is different from that used in determining the standard cost, there are compensating pay and efficiency variances. For instance, if the workers are generally more efficient and this is reflected in their base pay, there is an efficiency gain with a compensating pay loss. If the composition of the labor force is the same as that used to determine the standard base pay, there will be no pay loss or gain so long as each employee earns the percent efficiency included in his base pay. Since the percent efficiency in cost is the highest ever consistently attained for each burden centre, most centres will show some efficiency losses.

ESTIMATES

The estimating department in each division must summarize the standard job components on all orders and determine the standard costs with the help of the division accountant. This information is given to merchandising, in the marketing organization, for pricing purposes. The estimating department must also prepare similar information on those jobs for which standards have not been set. Material requirements are usually well specified, but the labor requirements may be nonstandard. In such cases the foreman usually provides the estimates of time requirements. Although more than 90% of the work in the division is on standards, estimates may be very important for certain departments or burden centres.

IMPORTANT FEATURES OF THE OPERATING PLAN

The use of standards for pricing purposes thrusts a large share of profit responsibility upon the manufacturing organization. Their performance relative to the standards will directly affect company profits.

Factory accounting feels that it is their job to keep the figures slightly in the red. Manufacturing management prefers to have the figures show slight gains. The three parts of the plan—budgets, standards, and estimates—must be understood both in terms of company goals and in terms of operating procedures. Direct and indirect labor are the most significant features of the plan from both points of view.

Manufacturing management participates in the budgeting procedure at all levels. Although the division accountant prepares the initial budget, management shapes the budget for the most part. For this reason it is usually accepted by the foreman as the proper goal for operations at the budgeted level of volume. But indirect labor

[2] Dispute over this criterion will be discussed at the end of this section.

is normally considered variable with department hours in the reports. Although the foreman has no control over the level of operations, he is expected to conform to the variable budget for indirect labor. The foreman must adjust his indirect work force by work transfer, labor loan, or even by layoff. While higher levels of management recognize the adjustment difficulties, there is considerable pressure to meet this budget. A flexibility in interpretation of the budget weakens the effectiveness of this measure of departmental performance. Strict interpretation may antagonize the foreman.

The standards for material are readily accepted. The standards for direct labor are in dispute. The controller supports the criterion to be used for the percent efficiency in cost. This criterion is easily applied but is disputed in some areas of the company and is even subject to some question in the factory accounting organization. The criterion of highest attained efficiency is used for reasons relating to pricing purposes as much as it is for reasons relating to control purposes. A consistent and competitive measure of cost is needed for pricing purposes. The controller argues that the highest attained past performance represents an efficient utilization of facilities and is therefore suitable. A goal and measure is needed for manufacturing performance. It may be argued that because this standard has been achieved it is a reasonable goal and measure. Engineering and merchandising contend that standards set by the use of such a criterion are too dependent upon the vagaries of manufacturing performance. The works manager and division management argue that such standards are unrealistic because such high performance may never be achieved again.

There is another possible drawback to the use of such a criterion. The foreman may be unwilling to push for performance above standard if he knows that the standards will be raised accordingly. If the standards are raised, it will be more difficult to make a good showing the following year. There is no formal, explicit recognition of increases in standards. One department head felt that there were two factors counteracting the appeal of this approach. The first factor cited was an innate desire on the part of the foreman to know that he had done the best job possible. The other was the foreman's ambition to be recognized and rewarded. The department head felt that there was sufficient recognition of an improvement in standards to keep this goal operative. This recognition in the minds of the department head and division manager, the foreman's superiors, might take the form of raises or promotions. While such factors may be effective to some degree, their significance may diminish as the foreman becomes older and the prospects of promotion fade.

The relation of the base rate for pay purposes and the percent efficiency in cost (the labor standard) will significantly affect the control problem. As has already been noted, most workers feel that the bonus for work at greater than 140% efficiency is not sufficient compensation for the extra effort. Hence incentives for the worker may not be effective beyond this point. If base rates are low, so that good performance should actually be greater than 140% efficiency, it will be very difficult for the foreman to attain goood performance. As the percent efficiency in cost increases, the control problem becomes relatively more difficult for the foreman.

The foreman can strengthen the incentive by withholding base pay increases until good performance has been reached. This is contrary to the accepted criteria for base pay increases, however, and it may subject the foreman to severe criticism

from the work force. Thus, while the division accountant determines the percent efficiency to be used in cost, the rate setting department of the personnel division may limit the effectiveness of the standards for control purposes.

Estimates

The foreman estimates the time requirements for work which does not have standards. Since departmental performance is measured in relation to these estimates there is some reason for making loose estimates. Merchandising examines these estimates carefully because prices and quotations are based on them. If merchandising feels that the estimate is out of line with competition, they do not hesitate to contact the division manager about the estimate. Pressure is exerted down the authority line so that the need for competitive estimates is felt at every level. If a job is lost because of a price difference of a few cents, the reaction is felt through the line also. Since competitive estimates may result in more work for the foreman's department, there is a positive incentive as well. This feedback seems to be an effective means of obtaining reliable estimates.

When a job is either off-standard or on estimates, the worker receives only base pay. The opinion is unanimous among management that most workers slow down if they are not on the incentive system. The percent efficiency in cost is used to measure departmental performance wherever rate setting standards have been established, even if the worker is not on incentives. Estimates are used to measure departmental performance on all other work. Hence the foreman strives to keep as much work on standard as possible. Machine difficulties or unusual problems which might throw work off-standard are quickly corrected. There is pressure to get standards set for as much of the estimated work as possible. Because of these control difficulties, those departments with a large proportion of estimated work are characterized by efficiency losses. Performance measures are not consistent in this respect.

THE REPORTING SYSTEM
COMPARISON OF ACTUAL TO PLAN

REPORTING SYSTEMS

Feedback is an essential element of any control system. The need for some formal means of feedback becomes more important as systems become more complex. Cost variance reports serve this purpose in the industrial control system.

The reports used in any organization may be characterized as scorecard reports, attention directing reports, or problem solving reports.[3] Scorecard reports are essentially records. Attention directing reports serve to guide managerial effort to areas of particular difficulty, thus employing the "principle of exceptions." Problem solving reports usually result from special, detailed studies of specific trouble areas. Each of these report types may be found in the company reporting system.

There are two sets of formal reports in use in the manufacturing organization—those originating with line management, and those originating with the accounting organization. The major variance reports are the principal focus of this study but two reports by management will be described briefly to complete the picture of the

[3] Herbert A. Simon *et al., Centralization vs. Decentralization in Organizing the Controller's Department*, for the Controllership Foundation Inc. (New York: American Book-Stratford Press Inc., 1954), p. 3.

CHART OF REPORTS

TITLE	SOURCE	DESTINATION	FREQUENCY	CONTENT
Managerial Reports				
Foreman's Report	Foreman	Division Manager	weekly	Primarily physical events in the department.
Division Manager's Report	Division Manager	Works Manager	weekly	Physical events in the division which Works Manager cannot know.
Accounting Reports				
Indirect Labor	Division Accountant	Foreman Division Manager	weekly	Record of indirect labor charges by type and variances in the department.
Foreman's Book	Division Accountant	Foreman Division Manager	monthly	Record of direct labor performance by burden centre and totaled for the department.
Manufacturing Variance Report	Central Accounting	Works Manager Ass't. Wks. Manager Division Manager Factory Accountant Division Accountant	monthly	Summary by departments and divisions of monthly variances for labor, materials, and budgets.
Division Accountant's Letter	Division Accountant	Works Manager or Assistant Division Manager Department Head Factory Accountant	monthly	Highlights and details of the significant variations shown on the Manufacturing Variance Report.
Manufacturing Profit and Loss Report	Central Accounting	Works Manager Controller Factory Accountant Top Executives	monthly	A factory profit and loss statement for the month and to date.

EXHIBIT I

formal communication process. The chart of reports (Exhibit I) summarizes the system to be presented here. Annual reports of a similar nature supplement this regular system.

REPORTS FROM MANAGEMENT

Each foreman is required to submit a weekly report to the division manager. No specific form or content is required but the foreman usually focuses on physical events in the department. He may discuss problems in the work force or difficulties encountered in running a new machine. Reference is rarely made to results as shown on accounting reports. The manager of the division studied is in regular contact with the foreman. If an item is of major importance, it should immediately be brought to the attention of the division manager by the foreman. While these reports do not give the division manager much new information, they do force the foreman to describe the significant aspects of his operations in a formal manner. The division manager feels that this is a good way to keep the foreman alert and aware that his work is being examined. The fact that this report is written directly to the division manager by the foreman indicates that the department head is not an essential communication link.

The works manager receives weekly reports from the division manager. Since he does not have direct contact with divisional operations, the works manager must depend on formal reports of operations. He must rely on these managerial reports as well as the reports from factory accounting. The division manager attempts to

communicate facts about important aspects of divisional operations which the works manager cannot get from other sources. Hence these reports will focus on physical problems such as facilities changes. In addition to this written communication, the works manager meets regularly with the division managers to discuss problems of general current concern.

REPORTS FROM ACCOUNTING

There are several different reports issued regularly by factory accounting to various levels of factory management. Most of these reports are written in terms of variances from standard. If this variance reporting is to lead to effective control, the amount of variance, the source, and the cause must be designated.

Indirect Labor Report

Indirect labor is the largest budget item included in department responsibility. Because this is a major control item at the department level, reports showing departmental performance as compared with budget are issued weekly. The report is published about two working days after the close of each week. Cost variances for labor types, such as supervisors, adjustors, clerks, etc., are shown by weekly amounts as well as by summaries-to-date. Both the foreman and the division manager receive this information.

These reports are carefully watched by the foreman because he knows that his superiors are especially interested in this aspect of his performance. It is important to spot significant trends early because corrective action is not immediately effective. Slight uncontrollable fluctuations in the departmental work load may also significantly affect the performance record for indirect labor. The foreman can take corrective action by transferring indirect workers to direct work, by arranging a labor loan with another department, or by laying men off if necessary. Solution to some of these indirect labor problems may require the joint effort of the foreman and the department head. The difficulties of control in this area are recognized by upper management, and some fluctuations are permitted.

The Foreman's Book

The foreman's book is the most detailed statement of operating performance issued to management. Monthly variances are shown for each burden centre in a department and a department summary is also given. Each foreman receives a copy of the report for his department and the division manager receives all of them for the division.

There are two accounting closings for manufacturing operations. Closings for direct labor figures are staggered. Having different closing dates for divisional accounts reduces the peak work load for central accounting facilities. All other accounts, such as materials, are closed at the end of the regular accounting period.[4] In the division, labor figures are closed two weeks previous to the other closing date. At this time efficiency variances are posted for both standard and estimated work; variances in delays—a standard allowance for non-productive time—are also posted. The foreman receives a copy of this information a few days after this first closing. The remaining categories in the foreman's book, pay gains and losses, miscellaneous adjustments and other accounts (which may vary among departments) are posted at the end of the regular accounting period. Postings in the foreman's copy are

[4] Accounting periods do not exactly correspond to calendar months.

completed at this time. The division manager receives his copy of the foreman's book a few days after this second closing.

This report is a complete and detailed summary of direct labor performance. It permits the foreman to examine the performance of each burden centre. However, it is probably too detailed to be used effectively by the division manager except as reference material.

Since the foreman receives part of the information in the report two weeks before the division manager sees it, he may be able to institute corrective action before being questioned about large variances. It is impossible to judge department performance on standards until both efficiency and pay variances are posted since they may be compensating variances. Thus there is at least a two-week delay from the close of the period for direct labor until there is sufficient information to make a reliable judgment of performance. This delay coupled with the month reporting interval may limit the control process even at the foreman level. However, the report does serve as a detailed record of performance.

Manufacturing Variance Report

This monthly report summarizes manufacturing performance by divisions and departments within the divisions. Departmental variances are shown for efficiency, pay, and budgets. Budget revisions are included to give a variance for total department responsibility. Over or underabsorbed burden is also indicated. This report is designed primarily for a review of operations by top management. It is distributed about two weeks after the close of each regular accounting period to the division manager, the works manager, the division accountant and the factory accountant.

This report may indicate organizational trouble spots, but it cannot isolate particular sources of difficulty. It serves as the principal basis for review by the works manager since a summary is given of all manufacturing operations, making it easy to spot large variances by organizational units. Each month a meeting is held by the works manager with the divison manager and division accountant to discuss the significance of this report. The works manager may first consult the division accountant's letter or even confer with the division accountant. At this meeting the division manager is expected to explain the causes of large variances and report a suitable plan for corrective action. The division accountant is present to provide the details behind the variances. The factory accountant may be present as a representative of the coordinated factory accounting efforts.

Since this meeting focuses on performance as recorded in the manufacturing variance report, the division manager may use the report as a starting point for review. However, its control value is largely limited to placing organizational responsibility for manufacturing variances.

Division Accountant's Letter

The figures backing up the manufacturing variance report are available to the division accountant before publication. On the basis of these figures, the division accountant prepares a letter highlighting important variances in the division for the previous month. This letter is the core of the cost variance reporting system. It emphasizes the largest variances, and occasionally provides more supporting detail than is normally available to management in other forms. The letter is written to the division manager and copies are sent to the department head, the works manager, and the factory accountant.

While the specific design of the letter is left to the division accountant, there is some pressure for uniformity among divisions by the works manager and the factory accountant. Variance discussions are usually organized by departments; those departments with the poorest total performance are considered first. A list of significant variances precedes the discussion of each department. In the division studied, variances in excess of $100 are considered significant. Supporting detail figures and brief comments may be given for each such variance. Comments may compare the variance with past performance or with present trends.

The division accountant discusses significant variances with department foremen prior to writing the letter. This discussion may reveal the reasons for the variance or it may bring out certain points which the division accountant had not discovered. It also serves to inform the foreman of those areas which will be emphasized in the letter. This may permit him to take action or at least prepare an explanation before he is questioned by the division manager. The foreman does not receive a copy of the letter unless some unusual detail, such as a list of delays, is presented. Then he receives only this part of the report.

While this letter represents an attempt to gain more efficient control by calling attention to significant variances, it is deficient in several respects. The principal criterion of significance, the dollar amount of variance, is not sufficiently sensitive for managerial control. Such amounts may be small in relation to total cost or they may represent normal fluctuations of the system in control. The dollar amount is one screen for information, but management must investigate further to determine the true significance of the variance and its controllability.

In some cases, variances are merely listed. In others, the comments may be an obvious summary of the figures. If the comments are to be valuable, they should add significance to the figures presented. Explanations of the causes of variances should be included when possible. The discussion with the foreman should aid this interpretation of the data. However, the reporting emphasis given to large variances is in itself very helpful to the division manager.

The delay involved in reporting this information limits the usefulness of the letter for current control. It is distributed almost two weeks after the final closing, and nearly four weeks after the closing for some figures. This means the average age of some information in the report may be more than six weeks, since the interval is an accounting month.

Since the works manager is not responsible for details of divisional operations, he does not need the division accountant's letter. The letter is one means whereby the factory accountant can judge the reporting effectiveness of each division accountant. It may be the most important control element for the division manager.

Manufacturing Profit and Loss Report

Manufacturing activities are summarized for top management by the monthly manufacturing profit and loss report. This report includes some breakdown of profit and loss on operations, profit and loss on factory inventories, and miscellaneous factory variances. Volume variances and material price variances are included to provide a monthly estimate of total factory gain or loss. This gives the works manager a summary of all manufacturing operations. It indicates the effect of manufacturing performance on company profit and loss.

Miscellaneous Reports

Other less significant reports are issued on a regular basis. Reports of book figures on inventory are issued monthly. These give an indication of performance on materials. Spot waste studies may supplement this control. The foreman is also given a summary of every mechanical division charge to his department. But those reports previously discussed in detail are the principal elements of the control system.

IMPORTANT FEATURES OF THE REPORTING SYSTEM

A study for the American Management Association suggested the following criteria for a good reporting system:

> It conforms to and reflects the company's organization structure, so that accountability for results is clearly shown.
>
> For each separate organization unit of the business it covers all important controllable elements of performance that affect the group's total contribution to company-wide goals.
>
> It represents, in total, an integrated plan of control so that information furnished to all levels of management ties together, simply becoming more condensed as higher levels of management are reached.
>
> It is, itself, under continuous control, so that it can be adjusted promptly to meet changing needs.[5]

This listing is a useful scheme for discussing the company reporting system.

For the most part, the reported figures are closely tied to the manufacturing organization structure. Variances may be readily traced from any of the reports to the responsible department and hence to the foreman. In this sense accountability for results is clearly shown.

Some reports are grouped by cost element, however. As a result, a division manager reviewing the indirect labor reports or the foreman's books is not reviewing performance by departmental responsibility. While these cost elements are separated by departments, the basis for review is the cost element. Comparisons are made between like elements. All of the other reports, including the division accountant's letter, are presented in terms of total departmental responsibility.

Most important cost elements in an organizational unit are covered by the reports. Direct labor performance is reported by burden centre. Indirect labor and other budgeted items are covered by department. But materials usage may also be important for some burden centres or departments. In these organizational units the regular reports do not cover one important aspect of contribution because they have not been designed for material control.

This reporting system is not integrated with the managerial authority structure. The foreman receives the most detailed reports of departmental performance. The department head, the foreman's immediate superior, is largely by-passed by the reporting system. All reports are available to him at higher or lower levels but only the division accountant's letter is sent to him directly. The division manager receives copies of all of the reports concerning divisional operations. The amount of detail in the indirect labor report and foreman's book cannot be regularly used by him to good

[5] American Management Association, *Reporting Financial Data to Top Management*, Special Report No. 25 (New York: American Management Association, 1957), p. 133.

advantage. While the manager of the division studied is interested in the detail and may make some use of it because of his background in divisional operations, the responsibilities of most division managers do not extend to such detail. The specific information contained in the division accountant's letter may be similarly inappropriate at the level of works manager.

The amount of data contained in these reports may be a deficiency in the plan of control. Most of the reports include a complete summary of the operations in each department. As a result they are primarily scorecard reports, or accounting records. Except for the division accountant's letter, no attempt is made to emphasize unusual variances as areas requiring investigation. The principle of exceptions is applied only in the sense that performance is reported in terms of variance from standard. The very mass of data included in the foreman's book, for instance, five or six variances for each burden centre in the department for each month of the year, makes it an unwieldy control tool. Even the preliminary screening in the division accountant's letter makes that a more effective tool—it is the only attention directing report regularly issued.

The timing of the system limits its effectiveness for current control purposes. While the system provides an integrated review of operations, it does not provide an effective plan for control.

The reporting system itself is not in continuous control. Standards are reviewed annually and adjusted to suit operating conditions. The structure of the reporting system is not reviewed although such a review is recognized to be important. One of the most experienced division accountants acknowledged this need in suggesting the following questions for an annual review of the reporting system by each division accountant:

1. What is the report about?
2. What value is it?
3. What can be done with the facts presented?
4. Its use—by whom—when—where—why?
5. Is the terminology correct?
6. Is it understood by those who get it?
7. Is it worth the expense of making?
8. Should it be continued?

There is no such review. Management feels that factory accounting should know what information is required. The division accountant feels that management should take the initiative for report changes. As a result, the system is weak in certain respects. Although special reports may fill some changing needs, some needs may go unnoticed.

MAJOR CONCLUSIONS

STANDARDS

The set of standards is the foundation of the variance reporting system. All reports are based on these standards. In accounting literature, two factors have often been cited as essential to an effective system, (1) a basis for standards which is understood and accepted by management, (2) a uniformity of standards. Neither condition is fully satisfied by the standards in the company system. The requirement that

they shall represent the highest work efficiency consistently achieved at any time in the past is disputed. Because standards are based on past performance, they may be much more easily reached in some burden centres than in others. As an average high attainment for the work of an organization unit, the standards may be more easily met on certain types of work. Hence performance records for one unit may vary with the composition of the work load.

Despite these objections standards are used by line management to measure performance. Because records are maintained in terms of variances from standard, they are used for review at all levels of management. Denial of such a basis for review by any single member of management would force withdrawal from the system. Standards must be accepted as proper goals for performance if a good record is desired.

It is possible for the foreman to undermine the effectiveness of the system. He may be able to manipulate the work force so that gains in some areas will cover up losses in others. This manipulation distorts the picture of each cost element. It affects total department responsibility only insofar as it affects future standards. If the records do not reveal highest performance in each area, future standards will not be set at the proper limit. Since there is no direct reward for improving standards, the foreman may be reluctant to push performance beyond this level.

The strongest force for the control of direct labor is the incentive system. When workers are not on incentives, the foreman finds it difficult to achieve the standard efficiency in cost. The poor performance records of most departments on estimated work indicate that the foreman needs a more effective tool for control when incentives are not used. The set of standards is more useful for control at upper levels of management than it is at the foreman level.

THE REPORTING SYSTEM

Most of the reports issued by factory accounting are more useful as records than as controls. If information is defined to include an element of unpredictability or surprise, then data confirming the fact that the operation is close to standard may not be information. Therefore, many of these reports may be low in information content. "In order for information to have value it must lead to a difference of behavior from that which would have occurred without the information."[6] By this criterion the value of reports could be increased by focusing on those variances requiring management's attention. The division accountant's letter uses a screen for the size of variance to accomplish this purpose. A mass of detail could be eliminated by applying some such screen to other reports. A review of all aspects of performance has become entrenched in most systems where some authority is delegated but responsibility is retained at a higher level. However, if this review pattern is strong, it may not be realistic to attempt to operate with less than complete data.

Timing is another formal aspect of the reporting system which is subject to criticism. The cost and value of information reported for managerial uses is affected by the age of the information.[7] The age of the information reported varies with both

[6] Floyd E. Gillis, "Information as an Input to the Firm", *Selected Readings for Management Information Systems.* (School of Industrial Management, Massachusetts Institute of Technology, 1957), p. 2 (Dittoed).

[7] For a thorough discussion of this concept see Robert H. Gregory and Thomas V. V. Atwater, Jr., "Cost and Value of Management Information as Functions of Age," *Accounting Research,* VIII, 1 (January 1957), 42-70.

the reporting interval and the reporting delay.

The value of the information for managerial purposes decreases with the reporting delay. Operating conditions may change or unfavorable conditions may persist for some time before they are reported. The most valuable information for control purposes describes present conditions, but it may be very costly to report information immediately. The cost will decrease as the delay increases. The shape of the cost-delay function will vary with the nature of the reporting facilities.

In this system the cost of reporting may drop sharply two or three days after the close of the accounting period. The foreman's book and the indirect labor report are the principal bases for detailed control of operations by the foreman. These reports are issued two or three days after the close of the period. Other reports, such as the manufacturing variance report and the division accountant's letter, may be published two weeks after the close of the period. This delay seems unnecessary. Since the division accountant's letter is the principal control tool for the division manager, the reporting delay may significantly affect the value of the letter for managerial use.

The most serious delay is that caused by the two accounting closings. In the division studied. direct labor figures are closed two weeks before the close of the regular accounting period. Efficiency variances for direct labor are posted at the first closing. Pay variances are not posted until the end of the regular period. Since both figures are needed in order to appraise departmental performance, there is a minimum delay of two weeks before performance can be judged reliably. There are often reporting delays of another two weeks; the total delay may be four weeks. This seriously limits the effectiveness of any control action.

The age of information varies with the reporting interval. For a four-week interval the average age of the information at the close of the period is two weeks. If the reporting intervals—usually one month in this system—were reduced, more current information would be available; but reporting costs increase at least proportionately. Since reports are now issued in conjunction with the normal processing of records, any change would greatly increase the reporting cost.

The potential value of the information for control purposes also varies with the reporting interval. Observations taken over short intervals show large fluctuations and reveal little consistency from period to period. Observations taken over long intervals permit averaging to take place and may disclose little fluctuation. Information for control purposes must reveal variances which may be traced to significant causes but must not be confused by random fluctuations in the system.

The department record on indirect labor is affected primarily by the work load. Since immediate control of this item is not possible, it is important to predict performance. The work load does not fluctuate rapidly, so weekly intervals may be appropriate for detecting trends. The performance record for direct labor will vary considerably with the character of the work. Because this changes daily, considerable fluctuation may be noted for short intervals. Such changes are not indicative of differences in departmental efficiency. It may be necessary to use a monthly interval for direct labor so that these fluctuations are averaged and a reliable picture of departmental efficiency is obtained. Only a thorough examination of the work characteristics would determine the most valuable interval.

The distribution pattern of reports does not conform to the managerial structure. Too much detail is reported to the division manager in the indirect labor report and the foreman's book. These reports may encourage the division manager to watch departmental operations more closely than necessary, thus using his time inefficiently. The department head receives very little information from the reporting system. He may benefit from more information since he is at a lower level of management than the division manager and is concerned more directly with operational details.

The weakest cost element of this reporting system is in the area of material controls. Monthly reports of book inventory figures are the primary means of control. While material usage is not normally an important variable in departmental operations, it may be significant in some cases. Special reports from spot control studies are too late to prevent serious losses.

THE SYSTEM IN ACTION

Two behavior patterns indicate that the system is not being used efficiently. Large gains are not usually investigated though they may occasionally be highlighted in the division accountant's letter. A department head, commenting on this fact, said that management must concentrate on losses and does not have time to investigate gains. A study of gains may reveal ways to improve performance in other areas, however. In one case a study of departmental gains might have revealed the serious effect of an error in the accounting system. This error disguised a bad condition in the same department.

Both the division manager and the works manager question their subordinates about poor performance records even if they are aware that corrective action is being taken. This is done to keep the subordinate alert to the regular review process. If managerial attention should be concentrated on those areas which offer prospects for improvement, then this procedure does not make effective use of managerial time.

The authority of lower levels of manufacturing management is decreased because superiors receive reports on manufacturing operations from outside the line organization. The position of the division accountant responsible for preparing these reports is strengthened relative to those lower levels. The operation of the reporting system does not affect the authority pattern.

Opinions regarding the value of this cost variance reporting system are contradictory. Management feels that it has provided an effective means of reviewing performance and a basis for taking corrective action in particularly difficult areas.

Factory accounting doubts that is contributes to effective control. Several cases have been found in which the system prompted corrective action for unfavorable variances. Benefits may be obtained from indirect control—from motivating the foreman and other managers to use the standards as a goal—but they cannot be proven. It is the author's opinion that the system has contributed to manufacturing efficiency but that it may be significantly improved. The areas most susceptible to improvement are (1) foreman incentive to raise standards, (2) report distribution, and (3) report timing.

The Editor's Choice

INCORPORATION AND INCOME TAX IN CANADA

by G. W. Riehl, C.A., R.I.A., published by CCH Canadian Limited, June 1960.

In small and medium-sized businesses, there comes a time when one of the major considerations that faces the owners is to decide on whether to operate as individual firms or to incorporate. The author of this 34-page booklet outlines the impact of the Income Tax Act on both the corporation and the owner-operated business. After examining the tax structure, he concludes that, though there are tax advantages for the incorporated firm, the advantages to a business must be assessed giving weight to the peculiarities of each case both in the immediate and long-run operations. A handy factual guide outlining basic considerations.

AN APPLICATION OF REPLACEMENT VALUE THEORY

by A. Goudeket, Journal of Accountancy, July 1960.

This is a factual explanation of the methods used by the Philips Company of the Netherlands to present financial results in constant value units. The author states that in this country, an accounting principle is one that conforms to sound business practice rather than one that reflects "generally accepted practice." The author illustrates how replacement value is determined and then shows how these values are reflected in the accounts.

RETURN ON INVESTMENT

N.A.A. Bulletin, June 1960.

In this bulletin, 11 papers are given on methods of measuring and other aspects of capital planning. This publication reflects the increasingly widespread interest in more refined methods of assessing beforehand decisions affecting the long-run health and objectives of industry. At the end of the bulletin is an excellent bibliography to which *The Appraisal of Capital Expenditure* by C. G. Edge, published by S.I.C.A., would be a valuable addition.

TRANSPORTATION DILEMMA: THE WAY OUT

Dun's Review and Modern Industry, June 1960.

In this special report, it is pointed up that transportation is increasing in cost despite radical shifts in means of moving goods. Some of the factors that hamper movement and thus increase costs are: increased traffic problems in congested areas, regulatory restrictions, and work rules that result in featherbedding. Five case histories illustrate measures taken by some companies to help solve the problem.

AN INTRODUCTION TO INVENTORY MANAGEMENT

by B. E. Goetz, Advanced Management, July 1960.

This brief article sets up simple models to illustrate the problems of inventory control and illustrates the application of mathematical formulae for this purpose. The intention here is to acquaint management with the mathematical approach to control so that they may intelligently discuss and know what specialists can and are doing in this field.

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Cost and Management

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Editorial Comment . . .

Inequalities in Tariff Structure

ALTHOUGH the customs tariff structure of any country must, of necessity, be quite involved, nevertheless a distinguished former Chairman of the Canadian Tariff Board has described the Canadian tariff as being "easily one of the most complicated in the world." Such complexity can cause Canadian importers hardship because of inequalities which have crept into the tariff structure. Why is this so, and what can be done to alleviate this unfair situation?

Firstly, it must be remembered that there has not been a general revision of the Canadian customs tariff since 1907. Subsequent annual amendments to the Customs Tariff Act have attempted to make changes in a piecemeal fashion only. The result is that today there is great need to modernize the whole tariff structure. Many tariff items need to be rewritten, eliminating in the process some old provisions which have become obsolete. New items should be introduced and in some cases existing items need to be reworded.

Secondly, confusion can be created by the multiplicity of tariff rates that often exists in connection with any one commodity. This is an important feature of the Canadian tariff, since there are presently about 2,000 items and sub-items contained in it. On the other hand in some other countries there is only one rate applicable to any given commodity. In Canada there will be at least three statutory rates for each tariff item or sub-item depending upon the country of origin of the commodity and sometimes more if different rates prevail under GATT or a bilateral trade agreement. Also a rate might be governed by the end use of the commodity after it has been imported into Canada. As an illustration, take the case of olive oil imported into Canada. There are 16 rates shown in the tariff item covering this commodity. Twelve of them are free depending upon certain end uses to which the olive oil is put. The remaining four rates cover general uses.

Multiplicity of tariff rates can arise in other ways. In the case of fresh fruits and vegetables, the particular rate of duty applicable will be governed by the season of the year in which they are shipped to Canada. Also in a manufacturing industry such as the automobile industry, the tariff rate to be applied against automobile parts will depend upon whether or not the Canadian manufacturer of motor vehicles

does or does not succeed in achieving a designated percentage of Commonwealth content on the finished product.

Thirdly, for many years an outstanding feature of the Canadian tariff has been the proliferation of special purpose or end use tariff items. To a large extent this is due to the development of "branch plant" industries in Canada. As a result a Canadian industry might on the surface appear to be enjoying adequate tariff protection on its products since high tariff rates are prescribed in the case of such products. However, this apparent tariff protection might easily be diluted if, as a result of a number of end use tariff items, many of its Canadian customers are given the right to import the same commodity at lower rates of duty or even duty free.

This situation was very acute until 1958 in the case of the tariff items governing imports of basic iron and steel products. Over the years many end use items had been inserted into the Customs tariff and generally speaking this group of tariff items needed revision badly. The matter was referred to the Tariff Board for review and recommendation. Amongst other things, the Board recommended the elimination of most of the end use tariff items applicable to basic iron and steel products. This recommendation was adopted by Parliament in 1958.

Fourthly, a significant number of tariff items still attract specific rates of duty. Although the trend is definitely towards expressing a rate of duty as an ad valorem rate, there are still important commodities governed by a specific rate. A specific rate is generally considered to be regressive in character and designated to conceal the extent of tariff protection from the Canadian public. In periods of declining prices the ad valorem equivalent of a specific rate increases considerably. On the other hand if prices of the commodity concerned are increasing, the ad valorem equivalent declines and often very little net protection is left for a Canadian manufacturer.

As a variation of this use of specific rates of duty, there are tariff items where value brackets have been inserted. This technique permits different tariff rates to be applied to different grades of the same commodity. With the passing of time and changing prices, unforeseen results can take place. As an illustration, for many years the tariff relating to colored cotton fabrics provided for bracket tariff rates. In the most favored nation schedule the highest rate of duty was applicable to fabrics valued at less than 50¢ a pound. Lower rates were applicable as the value of the fabrics increased. When this item was inserted into the tariff in the 1930's, the bulk of colored cotton fabrics was valued at less than 50¢ a pound and consequently attracted the highest rate of duty. In the meantime price inflation has taken place with the result that the same imported fabrics that would around 1938 have attracted the highest rate of duty applicable to fabrics valued at less than 50¢ a pound would now attract the lowest rate of duty applicable to fabrics valued at more than 80¢ a pound. As a result of a recent Tariff Board Reference into textile rates of duty, Parliament adopted in 1960 the recommendation of the Board that the value bracket provision of this particular tariff item be deleted.

From this it can be seen that the use of value brackets during times of rising prices can result in an effective lowering of tariff protection without any deliberate action being taken on the part of the federal government.

Fifthly, in any detailed taxing statute such as the Customs Tariff, anomalous situations are bound to arise which require correction. This is particularly so when

annual amendments are made in a piecemeal way. As an example, due to a Tariff Board investigation, Parliament in 1958 rectified an anomaly which had existed previously. A tariff item was inserted which provided for duties on rolled zinc. The previous situation under which zinc in primary forms was dutiable and the product rolled therefrom entered Canada duty free, which worked to the detriment of Canadian zinc rollers, was rectified.

Sixthly, in order to prevent inequalities from arising, it is necessary for improvements to be made from time to time in the nomenclature used in various tariff items. By way of illustration, for more than half of one century certain tariff items have used the word "Hollow-ware" which had an English origin. The word is not common in commercial parlance in North America, is not defined in the Customs Tariff Act, and has caused the Canadian Customs officials many headaches in their administration. The Tariff Board in a decision more than ten years ago suggested that the word as used should be clarified, but to date no change in the wording has been made by Parliament.

The foregoing examples demonstrate the need for a comprehensive revision of the Canadian customs tariff structure, having in mind the desirability of eliminating situations where unfair results can take place. In brief, these necessary changes must be made in the interest of modernizing the tariff, simplifying it as far as possible, eliminating anomalies, and improving the nomenclature.

How can this best be done? It has been suggested that a Royal Commission be created to undertake this gigantic task. Unfortunately, the history of Royal Commissions in Canada indicates that such an ad hoc body would not be able to deal with a matter such as this expeditiously enough. Also, the nature of the task would be so complicated that years would elapse before any final report would likely be made. By that time a number of its earlier recommendations relating to revised tariff items might in turn have become obsolete again. This can happen in the case of fast-growing industries. Only ten years ago the Tariff Board investigated the tariff status of the Canadian plastics industry and made recommendations which were in due course implemented by Parliament in 1952. It has now been found necessary to direct the Tariff Board to review these same plastics tariff items again as part of its current Chemical Reference.

Instead of a once-in-a-lifetime review of all of the tariff items, it is felt by many competent authorities that a more realistic approach would be to have a more or less continuing re-examination of the tariff under way all of the time, having in mind the continually changing industrial conditions, products and technology. This was the recommendation of the Gordon Royal Commission on Canada's Economic Prospects in 1957.

By approaching the problem in this manner, the most suitable agency for conducting the task would be the Tariff Board. In fact from time to time in the past since its creation, and more particularly since 1949, it has made comprehensive reviews of tariff items affecting certain designated industries (plastics, flat glass, basic iron and steel products, textiles, etc.). In each of the post-war recommendations of the Board, which incidentally have been largely implemented by Parliament, the factors outlined earlier in this editorial have been given proper consideration by the Board. It is to be hoped that this good work of the Tariff Board will be continued, and at an accelerated pace, if possible.

MANAGEMENT DEVELOPMENT AND THE ACCOUNTANT

By John V. James,
Vice President—Finance,
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Dresser Industries, Inc.,
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Over and above his routine duties, the accountant has a responsibility to report and interpret operating results to top management. This article approaches the development of accounting personnel from two angles—how the accountant can best organize his work to fulfil this vital management function and how management can provide the best environment for developing effective management accounting personnel.

ALL OF US have been exposed to a great variety of literature on the subject of management development. Our universities and colleges have numerous courses in their curricula covering many facets of this varied and complex subject. Indeed, many schools concentrate on the training of individuals in specialized fields of management such as finance and accounting.

I would like to share my viewpoint, and that of my company, on what we consider to be the most important factors in the development of the accountant as a top member of the management team.

First and foremost, we would expect accounting and financial personnel to appreciate and practice the principle of accounting to serve the needs of operating management. Far too many accountants, in our experience, adopt the viewpoint that accounting exists to serve the needs of one or two top members of management and that any service to other members of the management team, particularly at the lower level of supervision, is an added imposition and not a prime responsibility.

It is our viewpoint that people are our most important assets. We believe that the profitability and growth of our company is largely dependent upon the development of management people and the effectiveness of our management team at all levels of operations.

There is an old Chinese proverb which goes—

"If you are planting for a year, plant grain
If you are planting for ten years, plant trees
If you are planting for a hundred years, plant men."

This then is the panorama, or background, against which the development of men makes sense.

Our company believes in men, the unstated assets on the balance sheet and the final determinants of continued success. Our philosophy of management, as expressed

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Mr. James has been Vice President—Finance, of Clark Bros. Co., a major subsidiary of Dresser Industries, Inc., since 1958. He was previously Assistant Controller of the parent company and prior to that served in various accounting and administrative capacities, including Manager of Budgets and Procedures for Corning Glass Works and Controller of Carr Consolidated Biscuit Co. He is a graduate of the University of Pennsylvania's Wharton School of Finance and a member and former President of the Elmira Chapter of the National Association of Accountants. Several of his articles have appeared in the *N.A.A. Bulletin* and the *Industrial Accountant's Handbook*.

by the operating organization, is somewhat unique in the degree of decentralization of management responsibilities which we employ. This, in turn, places primary emphasis on the development of management personnel.

Let me briefly outline our organization to clarify this point. Dresser Industries is the parent company of a group of companies manufacturing and selling a broad range of equipment and supplies, primarily to the oil, gas, and chemical industries. The individual Dresser companies operate 16 plants from New York to California and maintain sales offices and warehouses at many locations throughout the free world. In addition, through associated companies and subsidiaries, Dresser now produces in European countries such as France, Greece, Holland, Italy, and Great Britain, as well as other parts of the Americas in Argentina, Mexico, Venezuela, and Canada.

The individual Dresser companies are joined together under a common ownership and conduct their operations with a rather *unique* and *basic* operating philosophy.

In brief, this philosophy means that Dresser Industries does not manage the individual Dresser companies—they manage themselves. The head of each Dresser company has complete responsibility and authority over his own operations. Each has its own financial, production, engineering, sales, and purchasing staffs. Each can and does move quickly to meet day-to-day problems.

The management of the parent company establishes the broad operating policies and maintains a staff of specialized management experts for consultation with and assistance to the individual Dresser companies. However, prime responsibility for operations rests with the individual companies.

THE ACCOUNTANT'S ROLE

It is against this background that the accountant's role within the organization becomes so important. The accountants are the eyes and ears of the plant. They provide the figures which set the goals of the organization. They also provide the figures which show whether or not the goals have been met. It is their responsibility to keep all levels of management informed about where they stand.

Like many other companies, we also maintain a continuing management development program. We use:

(a) Job descriptions, outlining functions, responsibilities and authority.
(b) Standards of performance—where practical.
(c) Appraisals, to furnish counsel and guidance on the individuals—problems, strengths, and weaknesses.
(d) Training—internally by—
    1. Planned management development programs
    2. Using job rotation and other training courses.
(e) External training by—
    1. AMA courses
    2. Universities
    3. Membership in professional or technical societies.

ORGANIZATION OF THE CONTROLLER'S FUNCTION

To give accounting and financial guidance to the management team, and to capitalize on opportunities for further advancement, we believe the controller or

supervising accountant must organize to ensure the effective administration of his department.

To maintain his effectiveness to management, we believe he must:

(1) Reorganize for freedom from routine.
(2) Maintain reporting procedures showing actual vs. plan by organizational responsibility.
(3) Analyze and interpret results and recommend improved practices.
(4) Make certain operating reports are understood.
(5) And by no means last—adopt the operating viewpoint.

Let me briefly outline some of the steps which must be taken by the accountant to achieve these objectives.

REORGANIZE FOR FREEDOM FROM ROUTINE

Reorganizing to achieve freedom from routine emphasizes the need for thorough planning and organization of the accountant's responsibilities.

The accountant must certainly classify the work to be performed, establish priorities for various projects, and provide for flexibility in the plans. In brief, his planning must encompass:

(1) What has to be done
(2) Why should it be done
(3) When must it be done
(4) How will it be done
(5) Who will do it
(6) Where will it be done.

It is only when this has been determined that he is ready to organize. In organizing he should keep the following points well in mind:

(1) The responsibility and authority of himself and others.
(2) Utilization of manpower and other resources effectively.
(3) Determination of how each job fits into the total picture.
(4) *Assignment of responsibility* and *delegation of authority* according to the ability of subordinates.
(5) Establishment of checks at regular intervals to evaluate performance, even when delegated.
(6) Making sure each job is defined.
(7) Keeping within the bounds of delegated authority.
(8) Selecting properly qualified personnel for the jobs to be done.

REALISTIC REPORTING OF ACTUAL vs. PLAN BY RESPONSIBILITY

In reporting the results of actual vs. plan, he must ensure the use of systematic methods to measure performance, which are understood by the operating people, and which constitute a realistic and objective appraisal of performance.

With the accountant's emphasis on past or future performance, he frequently ignores the present. To the factory supervisor the important reality is today—not yesterday or tomorrow. But most importantly, the accountant uses the past or future to *measure the present,* and to most supervisors this is *unrealistic.*

Is it any wonder then that plant supervisors so often perceive the activities of the accountant as "perpetual needling", "shots in the arm", or "hammers waiting to hit you on the head." Moreover, the concept that the operating people need such stimulation, and would be lost without it, is an insult to the supervisor's integrity. Instead of spurring him on, such activities often only anger him.

Because operating people see the standards which accountants frequently use as

unrealistic, rigid, and failing to take into account the concrete realities of their situation, these are frequently a major source of irritation to them.

For example, many executives are held responsible for operating results, which include allocations of the salaries of even their superiors. Obviously, they can do very little about reducing the salary of the boss.

I frequently have heard the expression from operating people that what these sarcastic "Birds" need is a little taste of factory life, or to get out of their "Ivory Towers."

Although we may laugh at the humor of the situation, this attitude frequently has a major impact on the accountant's or controller's role within the organization. If the attitude persists that the accountant is a *figure mechanic,* who does not take into account the realities of the operating situation, then his counsel, guidance or recommendations are not respected or used. This, in turn, usually relegates the controller or accountant to a secondary role on the management team.

To correct this situation, the accountant or controller must make certain operating reports are understood, and that they reflect the operating viewpoint.

ASSIST EXECUTIVES IN UNDERSTANDING REPORTS

Many accountants are subject to criticism because the executives for whom they prepare reports do not understand how the reports are made up and are unable to comprehend their significance adequately.

If the accountant makes sure the needs and requirements of executives are incorporated in the reports, then a sound basis for understanding has been laid. But it is necessary for the accountant to go further. Periodically, he should sit down with each of the key people who use his reports for a discussion of how the reports are prepared and what the individual items on the statement mean.

Many accountants or controllers, particularly the more technically-minded ones, consider this procedure unnecessary or overlook it entirely. Unfortunately, the people who get his reports will not always tell the accountant they do not understand them. They may not want to admit that they do not understand accounting or that they need help.

If the controller or accountant has relieved himself of administrative detail, then he will have time for these occasional explanatory discussions of his reports. In brief,

"He will have time to sell the products of his efforts to his customers."

"He will have time to gain their understanding and sympathy for his difficulties."

Then his customers or associates will think better of the controller's service, and the business will benefit accordingly.

BUILDING THE OPERATING VIEWPOINT

Many accountants, particularly those with public accounting background, prepare reports from a financial rather than an operating viewpoint. Although these reports may observe the fine distinctions in accounting principles, such accounting does not give the most help to the operating executive.

The accountant should review and overhaul the executive reports based on the operating needs of the individual for whom the report is prepared.

The accountant who can gain the confidence of the executive should discuss

candidly and frankly the limitations or deficiencies in these reports from an operating viewpoint. Suggestions should be sought on what additional information the executive wants. In short, the accountant should set up tailormade reports, if necessary, to help the executive do a better job, even though he may not exhibit any comprehension of accounting principles.

To correct any misleading ideas, I do not want to disparage any aspect of financial or public accounting. As a matter of fact, however, in many companies the reports prepared primarily for external use such as stockholders' reports, SEC reports, stock exchange listings, internal revenue, etc., have set the pattern for reports furnished to operating management to control operations. To the extent to which such reports do not meet the needs of operating management, they should be changed.

OUTLOOK FOR CONTROLLERS AND ACCOUNTANTS

Unless the accountant or controller reorganizes his approach to his job to meet these broad objectives, top management will build around him.

Other positions will be set up to carry on the most important and interesting functions that the controller or accountant does not have time to do or is overlooking completely. In many companies this program is already under way. Witness, for example, the number of companies which have directors of commercial research, budget directors, vice presidents of planning, or coordination, etc. attached to the staff of the chief executive. In other companies, the chief executive has an assistant who does important work formerly done by the controller or chief accountant. The process of building around the controller or accountant will continue at an accelerated pace unless the accountant sets himself and his department up to provide the kind of service that top management must have.

The accountant who offers poor management service has an excellent opportunity of reorganizing to re-establish himself as chief of staff to the chief executive. If he fumbles his opportunity, no bell will ring to signal his downfall as a principal aid to top management. His activities will simply become more and more routine; his reputation as a figure mechanic will become more firmly fixed in the minds of his associates; and his participation in top management decisions will become less frequent until, finally, he will be forgotten completely as one whose advice should be sought.

This can also be a moment of decision for the industrial accountant as he evaluates the position his boss holds in the eyes of management. His opportunities for progress and advancement will depend primarily upon the effectiveness of the service furnished to management. It therefore behooves him to try to improve this service.

HUMAN RELATIONS ASPECTS OF THE ACCOUNTING FUNCTION

Unless accountants or controllers see and feel the consequence of their behavior on others, they can never *understand* why their control systems will not work automatically and impersonally, and why they will always have to be administered in terms of people and their relationships.

In brief, they must learn to see themselves as administrators and professional managers rather than technical specialists. They must learn to become better listeners and practise the art of appreciating and accepting points of view different from their

own. They should also become better discussion leaders, for in this way they will become gradually oriented to the administrative point of view.

In general, the technical specialist has to accept responsibility for *only* some of the consequences of his behavior, usually only the good ones applying to his particular specialty. The administrator, on the other hand, has to accept responsibilty for *all* the consequences of his behavior, including the activities of subordinates. This is what makes the administrator's job tough, but also a real challenge.

To put it in the form of a question, is the accountant or controller to be regarded as a specialist, with skills different from the other executives in the business, or is he to be *primarily* regarded as a business man whose assignment in the business is to make the figure function a real part of the management operation of the business?

Some of our educators and professional organizations have questioned whether separate curricula should not be established in our colleges and universities and even separate schools established for the management accountant or controller. Some proponents of such special training even look to a separate degree.

In most of this discussion, there has been the recognition that the management accountant or controller would be expected to know something about *marketing, production, finance, human relations* and *law*. This is to imply that the management accountant is to be primarily an administrator and, secondarily, a technical specialist.

Whether we agree that the management accountant should be primarily a specialist or an administrator, we can agree that in many companies the management accountant or controller is supposed to possess a highly varied order of skills. Indeed, in many companies he has two quite different jobs. On one hand, he is the personal consultant to the president, or to other line executives, and as such he is somewhat of a staff financial advisor. On the other hand, he is a line executive with the responsibility for directing the work of perhaps hundreds of employees in his department, with an investment in equipment running often into hundreds of thousands of dollars.

As the head of this line department, he has to have specialists under him. He may have specialists in accounting forms and procedures, specialists in tax problems, specialists in consolidation work or SEC forms, perhaps even a specialist in electronic computers.

The pressure of this functional arrangement where the department head has to administer specialized areas, on the one hand, and act as a president's consultant on the other, seems to widen the gap between the top man and his assistants.

In many companies there is really no second man ready as a replacement. At the next level the people in the organization seem to be primarily specialists, and often when the controller dies, retires, or moves to a different company, management has to bring in a controller from another company, or hire their favorite CPA. All too often this is the pattern.

There are many ways of developing management accounting personnel. One is by job rotation. In the controller's area, this frequently has some limitations. A tax expert may be a very good tax expert, but may not be interested in normal rotation. The same thing may be true of other specialists.

Again, if you try to rotate department heads, you may find they are able to handle other departments, but it may take too long and the cost may be too great.

Another approach is to have several second level men operating on special assign-

ment whose job is to keep the controller posted and to prepare reports for him to present to other executives. This also has a price tag and runs the danger of developing "Crown Prince" complexes, which many companies like to avoid.

One approach employed very successfully in several of our companies has been to rotate personnel in production control, inventory, and other production or administrative tasks, as well as in the accounting department. We have found that these individuals have acquired a better understanding of the application and use of management controls, and a broader outlook than would otherwise be possible.

Also, where feasible, advantage can be taken of the very real benefits which exist in a decentralized operation. By this method, each division controller shares the same kind of experience as does the top controller in the main office. He develops the ability to organize his work, and to fulfill the control concept in working with and for the other executives in the division. His experience more nearly parallels the experience of the top man than is possible in any other organizational set-up.

Through such a plan, the top controller and his staff have an opportunity to watch the various division heads as they carry on a rounded job and not the heads of a specialized function.

It is a difficult task to develop a good management accountant or controller, but once he has come that far, there is no reason why he should not go still further.

The functions of the controller are believed by many to be so important that it is desirable for a president to go through them before assuming the job as chief executive of the company.

In a real sense, management accounting is the very fabric of the business; it is the common denominator that is woven through all of business. If a management accountant or controller can get on top of that, it is quite a natural thing for him to move into the top executive chair.

And quite a few controllers have done just that!

For further reading

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DRESSER ACCOUNTING ORGANIZATION, by J. C. Freeman, *MAPI Accounting Council Proceedings*, Jan. 1956.

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INCREASING THE CONTROLLER'S USEFULNESS TO TOP MANAGEMENT, by Marvin Bower, McKinsey & Company. *The Controllers Institute*, Cleveland Control, Nov. 1944.

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The Economic SCENE . .

by W. Allan Beckett

HOUSING—DISAPPOINTMENT OF THE YEAR

ALTHOUGH it is one of the few industries to demonstrate an upward tilt in 1960, Canadian housing activity has turned in a disappointing performance on two counts. First, the 1960 recovery in new starts began from a low level. The first quarter ran at a seasonally adjusted annual rate of 106,000 units, compared to earlier predictions of 120,000-125,000. And the lowest month of the year—March—barely notched the 80,000 mark. This compares to a peak rate of nearly 180,000 in the first quarter of 1959 and an annual level of 140,000 new starts in that year.

Second, the recovery from the March low has been slow and much less pronounced than the earlier housing upswings of 1952-1953 and 1957-1958. Although the rate reached 120,000 in July, August slipped again to 90,000. September may not have registered any further improvement based on new contracts data now available. Even with further improvement, 1960 as a whole is not likely to top 110,000 new units by much, making it the poorest year since 1954.

At the same time completions have slipped, and will continue to do so even for several months after the recovery in starts. The volume of units under construction has declined to a six year low of 65,000. Reflecting these developments, expenditures on new residential construction had reached an annual level of only $1.4 billion by the middle of 1960, against a peak of $1.8 billion in the first quarter of 1959.

There is considerable evidence that a new factor—a weakness in demand—is begining to make itself felt in the new housing market for the first time in the post-war period. Earlier periods of weakness in housing were usually related to supply—with shortages of men and materials in 1951 or of mortgage funds as in 1956. The 1959 decline in starts probably started as a result of insufficient mortgage money, but the weakness of the 1960 recovery cannot be traced to that source. In short, housing which previously had been strong during general recessions and weak during booms, is now displaying its own weakness during a period of general recession. The answer must be sought on the demand side.

The new and weak elements in the demand for housing may be listed as follows. First, the number of new families being formed is on the decline. While the first half of 1960 was about level with last year, it is at the lowest level in several years. Of course, new housing activity never exactly follows new family creation in the short run—for many years new houses built outran the number of new families. This reduced the backlog of demand, permitted upgrading and gradually made income a more important factor in new housing demand.

The decline in new families represents not just a drop in immigration last year and this, but fewer net formations on the part of existing Canadians. Part of this is due to emigration with the number of new marriages holding about level. As a second factor in slowing demand, the reduced level of immigration—an annual level of about 110,000 persons compared to nearly 300,000 in 1957—makes itself felt primarily on the existing stock of urban dwellings.

A third population factor concerns family size. Not only are there fewer families being formed, but fewer families are having children. Net natural increase in Canada's population was 190,000 in the first half of 1960 compared to 203,000 in the same period of 1959, with the difference accounted for almost entirely by fewer births.

A fourth and final population factor is bound up with mobility. Much of the demand for housing, and particularly for activity in the existing real estate market, stems from the geographic movement of families or internal migration. Movements of families declined fractionally in the first eight months of 1960 with most of the movement being accounted for by intra-provincial shifts. It may surprise some to know that a quarter of Canadian families change their address each year, so that a slight drop can create a large impact on real estate activity.

Another major factor in housing demand is family income. As a result of the recession of 1960, unemployment has risen, wages have risen more slowly, profits are down, and the rise in personal incomes has slowed appreciably. It seems unlikely that the direct income effects would have much impact on the demand for housing. However, the generally weaker economic situation does affect expectations and may lead many people to sit tight until the situation improves. It is not generally realized that about a third of all new houses are purchased by families who already own a home and are upgrading or moving for one reason or another. The increase in the housing supply, the less urgent need to find better accommodation, coupled with economic uncertainties serves to restrict this movement and produces secondary effects in the existing real estate market.

The best evidence of the current imbalance in housing supply and demand is the existence of some 3,700 newly built and unoccupied units in 36 Canadian cities—an increase of 25% between August 1959 and August 1960. And the average empty time has increased from 3.2 to 3.7 months over the period.

Recent government action to stimulate housing activity—direct loans to purchasers and builders, and reduced interest rates to rental companies—has failed to produce the familiar results of earlier years. The time may have come when efforts to increase the housing stock should give way to efforts to improve it. There are probably more than 100,000 sub-standard dwellings in the major metropolitan centres of this country. A program to clear these away and replace them with new and better housing would assist in the maintenance of the housing industry and its suppliers. It would add tangible value to the social capital of our cities. At present the initiative for such programs must come from civic authorities. Federal authorities may well be hoping for additional signs of urban enthusiasm in this connection.

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BEAVERS, OTTERS and idb

The beavers and otters in this case are not the kind that build dams or live in rivers. They fly high with heavy loads of freight—aeroplanes, in other words.

Flying experience with the R.A.F. during the war subsequently as a bush pilot was the background against which Jack X decided to start his own air transport line. I.D.B. helped him buy his first "Otter" aircraft, which he put into service flying personnel and equipment to mining and other developments in the North. Under his capable technical management and with his shrewd business sense the company was able to mark up good profits. These were ploughed back into the business and with some financial participation by other members of his family, satisfactory day-to-day financing was maintained.

To compete effectively with other and larger operators in giving good service, however, additional planes were necessary. Being well impressed with the principal's competence, and in the light of a satisfactory experience with the initial loan, I.D.B. found it possible to assist the small company's expansion by further loans to enable it to buy more "Otters" and a "Beaver".

Operations have not been without setbacks. Rugged terrain and uncertain weather sometimes aggravated operating problems but, despite these difficulties, the company with I.D.B. financial assistance, has been able to develop and consolidate its position. From a beginning with very small capital, the company now has assets worth hundreds of thousands of dollars, employs a large staff of skilled workers, and does an annual business that would have seemed unattainable a few years ago. All this has been made possible through the combination of a sound idea, good management and adequate and timely financing.

Foregoing is the account of one of over 3500 enterprises helped by I.D.B. financing. I.D.B. was established to meet financing needs of small and medium-sized businesses unable to secure satisfactory financing from other sources. If you have such a problem, or know someone who has, you are invited to contact any I.D.B. office or consult your lawyer, auditor or chartered bank.

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The Editor's Choice

TO BETTER RESULTS THROUGH A MORE ACCURATE BREAK-EVEN FORMULA

By J. Wiener, N.A.A. Bulletin, July 1960.

In this article the author questions the accuracy of the standard break-even formula under certain conditions. He shows that under most conditions variable costs are not constantly determined by production. Some costs are "disproportionate variable costs", and a formula is developed that, when used to calculate break-even, allows for this erratic variability.

THE LOGISTICS OF DISTRIBUTION

By J. F. Magee, Harvard Business Review, July-August 1960.

This author has made major contributions in the field of inventory management and distribution. In this article he examines the need for improvements in distribution systems. Then he outlines methods for improvement in the light of present-day advances in allied areas and the availability of new tools that will enable a vast improvement in service, efficiency and cost in this neglected area. An excellent article.

MULTI-STAGE APPROACH TO PRICING

By A. R. Oxenfeldt, Harvard Business Review, July-August 1960.

The author outlines six steps which narrow the alternatives to be considered in arriving at the price decision. The stages are: selecting market targets, choosing a brand "image", composing a market mix, selecting a pricing policy, determining a pricing strategy, and arriving at a specific price. This article should be of importance to accountants in that it breaks down specific stages in which it would be desirable to have specific cost information.

ECONOMICS OF BREAK-EVEN

By D. Vickers, Accounting Review, July 1960.

This is a comparative study of the accountant's use of the break-even analysis and that of economic theory. The author does an excellent job of pointing out that "Break-even analysis, under its traditional assumptions of linearity, is able to say only that the break-even point should be passed, and it implies, what is logically and empirically untenable, that the profit area will keep on widening as production volume expands." Accountants can learn much from economic theory that would make the use of break-even analysis more valuable and factual.

FINANCIAL PLANNING FOR GREATER PROFITS

AMA Management Report Number 44.

In this report will be found guides that financial managers may use to aid them in performing and planning their operations in pursuit of corporate objectives. The report is divided into four parts with 13 contributors of articles. Part I, "The Context and Structure of Corporate Planning", is started off by David Rockefeller who writes on the outlook in business and the economy in the next two years. Part II covers "Elements of Money Management"; Part III, "Elements of Profit Planning"; and Part IV, "The Capital Appropriations Program." This is well worth reading.

MANAGEMENT'S USE OF DIRECT COSTING — A CASE STUDY

By J. D. Goforth,
Treasurer, Controller and Secretary,
Lenkurt Electric Co. of Canada Ltd.,
Vancouver, B.C.

The most practical test of a new technique is how it works in practice. The company in this case study has applied direct costing to its planning and reporting activities for the past three years and has found many advantages in the method, particularly in the contribution it has made to improving the analysis of past and future volume-price-cost relationships.

IN THE UNCERTAIN '60s it has been said that this country's well-being will rest to an ever-increasing extent on corporate management. Management's work of charting a sound course through the growing entanglements of increased foreign competition, the continuing profit squeeze, accelerated product obsolesence, etc., is likely to be considerably more difficult than in the decade just passed.

To meet these additional challenges, management has been seeking new ways to improve the information flow on which to guide its actions. New techniques for data analysis and measurement have been developed such as market analysis of consumer trends, operations research in the field of production and inventory controls; and flexible budgets, direct costing, breakeven point and variance analysis in the accounting field. Actually, most of these techniques have been in existence for some years but they are "new" in the sense of being accepted and applied by any sizeable group of industries. With direct costing, for example, surveys in the U.S. by the National Association of Accountants revealed that only 17 companies were using it in 1953 whereas, by 1959, just six years later, the number was 197.

DIRECT COSTING—PROS AND CONS

These new techniques are not without their problems. It is difficult to read any accounting journal today without coming across the pros and cons of direct costing. To appreciate these points of view it is first of all necessary to define "direct costing." In simple terms it is the classification of production costs into direct and fixed categories: the direct costs—those varying with the volume of production—are charged to inventory; the fixed costs—those remaining relatively constant though production fluctuates widely—are charged against income in the period they are incurred. Direct costing is in contrast to the accepted practice of full absorption of both direct and fixed production overhead costs into inventory. The principal criticism of direct costing is that inventory values are understated in comparison to

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With Lenkurt Electric Co. of Canada Ltd. since 1957 as Controller, Mr. Goforth was recently appointed Treasurer, Controller and Secretary and elected a Director of the company. He graduated from McGill University with a B.Com. degree in 1949 and later articled with Clarkson, Gordon & Co., Montreal, receiving his C.A. certificate in 1951. Before joining Lenkurt, he was employed as Corporation Tax Assessor with the Taxation Division in Kitchener and as Secretary-Treasurer and Director of Werlich Industries Ltd. in Preston, Ontario. A Director of Student Liaison of the Vancouver Chapter for the past two years, he lectured in Advance Cost Accounting at UBC last year and lectures in Cost Accounting for the C.G.A. course this year.

full absorption costing. The advantage is generally considered to be that, with only direct costs moving through inventory to cost of sales, the distortion caused by differing levels of production and sales is eliminated. This advantage leads to an even greater advantage that is not usually mentioned by proponents of direct costing; that it provides the basic data necessary for the analysis of the complex inter-relationship of volume, price and cost in the determination of profit.

Can these advantages that are claimed for direct costing pass the test of actual usage? Or is it another fad that will soon pass into disrepute? The answer will lie in the case studies of companies which have experimented with the technique and found its advantages to be real and not theoretical. One such case history is outlined herein.

CASE STUDY

Lenkurt Electric Co. of Canada, Ltd. is a manufacturer of microwave, telephone carrier, telegraph and telemetering equipment for the communication industry across Canada.

In 1957 the company introduced direct costing and flexible budgeting into its operations in accordance with certain basic concepts held by the management of the parent company. By means of scattergraphs and other analysis of data relating to prior periods, a segregation was made of the variable and fixed costs. Numerous changes and improvements in the budgeting of these expenses were made that year in order to improve the reliability of the budget data. After establishment of reasonably accurate variable overhead rates, a revision was made of the standard costs to incorporate the variable rates into the standards.

PROFIT PLANNING WITH DIRECT COSTING

This led to the second stage; that of integrated profit planning on a direct costing basis—with detailed sales and production forecasts, profit plans, capital equipment and cash forecasts. The basic policy now governing the preparation of profit plans is that, prior to a new year, all levels of management participate in the preparation of cost centre budgets up through to the final profit forecast. If this forecast does not show a reasonable profit return, all the factors such as volume, product mix, discount mix, variable costs and fixed costs are reviewed again for possible changes. This procedure usually results in the preparation of a number of profit plans before final acceptance by top management. The approved plan is subsequently updated at the beginning of each quarter to incorporate the latest sales volume and product mix forecast. However, unless the new sales forecast reveals a major change (more than 10% usually), the cost centre budgets are maintained.

PROFIT REPORTING WITH DIRECT COSTING

The emphasis on planning led to the third stage in the direct cost application; that of redesigning the financial reports to management in order to incorporate the advantages of both the direct costing principle and the detailed planning. These reports have a threefold objective:

(1) To pyramid the detail up through the various levels of management.
(2) To take full advantage of the analysis of volume-cost-price relationships that only direct costing can really provide.

(3) To report largely on a variance analysis principle in view of the detailed planning of operations.

Several of the resulting financial statements are shown in the exhibits with sample data entered. These statements are in addition to the conventional balance sheet and profit and loss statements. The summary of variances statement (Exhibit I) indicates the net effect of volume, product mix, discount mix and price concessions on the planned profit pickup (gross profit), along with the capacity (fixed) cost variances that go to make up the total variance to planned net profit. Behind each of these variances is a detailed statement showing the calculation of the variances. Two examples are illustrated—the product mix variance statement (Exhibit II) and the capacity cost variance statement (Exhibit III). The volume variance statement (not shown) reflects the increase or decrease in dollar sales volume from the plan and translates this volume difference into the amount of profit pickup dollars lost or gained.

The product mix variance is a result of changes in the planned sales of each product type. Since these product types have differing costs (as percent of sales), a change in the sales mix will result in a lower or higher total cost of sales than planned. The product costs are standard costs on a direct costing basis, with the production cost variances such as material price, direct labor efficiency and rate, and overhead performance variances siphoned off and included with the capacity (fixed) costs. The product mix variance statement indicates the proportionate increase or decrease in the sales of each product in comparison to the plan and the

EXHIBIT I

SUMMARY OF VARIANCES—CURRENT MONTH AND QUARTER

FEBRUARY, 1960

($000 Omitted)

	February	*Qtr. to Date*
Profit Pickup Variances		
Volume	$ 8.5	$ 6.1
Product Mix	(13.2)	4.0
Discount Mix	.6	(.7)
Sales Allowance	–	(.3)
Total	$ (4.1)	$ 9.1
Capacity Cost Variances		
Manufacturing	$ (8.3)	$ (2.1)
Engineering	(.3)	(.5)
Marketing	1.0	.8
Finance	(.4)	(.3)
Administration	.5	.1
Misc.	(.2)	(.1)
Total	$ (7.7)	$ (2.1)
Total Variance to Net Profit	$(11.8)	$ 7.0

EXHIBIT II

PRODUCT MIX VARIANCE—CURRENT MONTH AND QUARTER

FEBRUARY, 1960

(\$000 Omitted)

	Plan—1st Qtr.		*February*		*Qtr. to Date*	
	Sales %	*Cost %*	*Sales %*	*Cost %*	*Sales %*	*Cost %*
Lenkurt Mfd. Products						
33 Carrier—33A/B	10%	47%	12%	47%	11%	48%
33C	6	49	3	48	5	48
45 Carrier—45A	11	50	12	50	12	50
45BN	6	53	5	53	6	52
45BX	10	51	9	50	10	50
45CB	4	53	3	53	4	53
Radio—74A	10	63	9	62	10	63
71A	—	—	—	—	—	—
Other	1	62	1	62	1	62
Teleg./Telem.—23A ..	4	55	4	54	4	55
24C ..	3	54	3	54	3	54
51B ..	9	55	8	55	8	54
53A ..	7	52	5	52	6	52
Other—32E	5	45	4	44	5	44
Lenkurt	4	60	3	60	4	60
Misc.	2	58	3	58	3	56
Total Sales/Av. Cost	92%	51%	84%	51%	92%	50%
Supply Items/Resold	3%	80%	11%	80%	4%	80%
Engineering Services	5%	80%	5%	81%	4%	80%
Total Sales/Av. Cost	100%	53%	100%	56%	100%	53%

Product Mix Variance

Formula: Actual Sales × Diff. Planned—Actual Std. Cost=Variance

February: \$426.5 × 53% − 56.1% = \$(13.2)

Qtr. to Date: \$802.1 × 53% − 52.5% = \$4.0

effect that each corresponding product cost has on the mix of the total cost of sales.

The capacity cost variance statement provides the detailed variances by cost centre for each of the principal functions. The variable production overheads included in the total costs of certain of the manufacturing cost centres are withdrawn and charged to inventory, leaving the fixed costs and the controllable variances to be carried as period expenses. This direct costing treatment of variable costs is more apparent in an example of one of the detailed cost centre reports (Exhibit IV). The cost centres containing variable elements include production control, material control, quality control and the factory.

EXHIBIT III

CAPACITY COST VARIANCES—CURRENT MONTH AND QUARTER

FEBRUARY, 1960

(000 Omitted)

			February	*Qtr. to Date*
MANUFACTURING:	Production Control	15	$ .8	$ .7
	Industrial Relations	16	.4	.2
	Production Engr.	17	(4.8)	(2.8)
	Purchasing/Mat'l. Control	19	.6	.9
	Quality Control	21	(.7)	(.3)
	Factory	22	.2	.8
	Material Price		(5.4)	(1.0)
	Direct Labor Efficiency		(.2)	(.8)
	Direct Labor Rate		.1	.1
	Freight In		.1	(.2)
	Inventory Adjustments		.5	.2
	Occupancy		.1	.1
	Total		$ (8.3)	$ (2.1)
ENGINEERING:	Engr. Development	60	$ (.3)	$ (.5)
	S.C. Services		—	—
	Total		$ (.3)	$ (.5)
MARKETING:	Sales Engr.	07	$ .5	$ (.3)
	Applications Engr.	09	.4	.8
	Contract Projects	88	(.8)	(.2)
	Sales Office		.9	.5
	Total		$ 1.0	$ .8
FINANCE:	Accounting	03	$ (.4)	$ (.3)
ADMINISTRATION:	Executive	01	$ .5	$ .1
MISC.:			$ (.2)	$ (.1)
	Total Capacity Cost Variance		$ (7.7)	$ (2.1)
	% Variance from Budgets		7%	1%

ASSESSMENT OF VALUE TO MANAGEMENT

While the direct costing technique as applied by the company does provide a reasonably clear picture of the factors affecting profits, it, like any technique, is only valuable if it is actually understood and used by management as a means of successfully "steering the corporate ship." To assess this use by Lenkurt's management is a difficult task. The basic policy formulation and the day-to-day operating decisions of any management are always the result of a complex series of factors such as judgment, personality, background data, interpretation, etc., so that to attribute certain changes solely to the use of direct costing would be in error. There

EXHIBIT IV

FACTORY — 22

COST CENTRE VARIANCES—FEBRUARY, 1960

		Month		*Year to Date*		*Variances (Unfavorable)*
		Budget	*Actual*	*Budget*	*Actual*	
400	Premium Time	$ —	$ 650	$ —	$ 650	$ (650)
401	Paid Absence	—	111	—	153	(153)
410	Management	2,015	2,015	4,030	4,030	—
443	Shipping	964	915	1,785	1,660	125
445	Indirect Labor	6,765	6,502	12,855	12,362	493
	Labor	$ 9,744	$10,193	$18,670	$18,855	$ (185)
501	Payroll Expense	$ 3,115	$ 3,614	$ 5,722	$ 6,007	$ (285)
511	Shipping Supplies	975	831	1,794	1,734	60
515	Production Supplies	1,594	1,284	2,961	2,682	279
523	Spools & Reels	254	362	464	526	(62)
524	Scrap	1,055	643	1,946	1,584	362
531	Tel. & Tel.	94	85	171	199	(28)
540	Travel	126	92	235	270	(35)
551	Depr.	3,750	3,400	7,500	6,800	700
	Direct Expense	$10,963	$10,311	$20,793	$19,802	$ 991
	Total Cost	$20,707	$20,504	$39,463	$38,657	$ 806
	Variable Costs to Inventory	13,720	13,720	25,589	25,589	—
	Net Fixed Cost and Variances	$ 6,987	$ 6,784	$13,874	$13,068	$ 806

has been, however, a definite contribution by the complete "package" of direct costing planning and reporting. This contribution has been apparent in the various functional activities of management reviewed herein.

(1) *Planning of Operations*—The effects of increased competition, product obsolescence, automation and the growing trend toward large, decentralized and diversified companies has led to a major shift of emphasis away from analysis of historical data to the newer field of forward planning. In Lenkurt, as in many other companies, planning is absorbing an ever-growing portion of management's activities. While profit planning is only one of many planning functions, it represents the final interpretation of all the plans into terms of costs and profit.

For this reason, profit planning has become a teamwork effort. Over the past three years, considerable effort has been applied toward improving the sales forecasting, the production and inventory forecasting, the cost centre budgeting, the standard costs, etc. The results have been gratifying. For example: in 1959, while there were some sizeable individual variances, the planned net profit before taxes was within 1% of the actual amount (in the six-figure bracket). This difference may never be that small again. However, it is anticipated that the profit planning will continue to reflect a high degree of accuracy.

The benefits of good planning to management have been considerable. It has enabled the company to foresee building and machinery requirements, manpower needs, capital demands and, of even greater importance, has provided the framework in which to assess the profitability of proposals put forward by the other planning functions of the company. These include:

(a) Proposals to increase or decrease certain prices—with their related effect on volume and profit
(b) Plans to increase marketing costs in order to increase volume
(c) Large scale "make-or-buy" proposals
(d) Plans to increase fixed operating costs in certain areas
(e) Cost reduction schemes

Direct costing is not necessarily a prerequisite of profit planning. However, it has been the company's experience that its use greatly facilitates the assessment of planning proposals (such as price changes) that would have a considerable effect on the interplay of volume-cost-price in determining profit. It has also led to the calculation of the breakeven point and the margin of safety which is invaluable in assessing the level of fixed cost budgets and proposals for increases or decreases in them.

(2) *Flexible Reaction to Business Cycle Changes*—The planning of internal operating activities is always conditioned by the external business climate. Typical of the capital goods industry, the company has had wide (up to 20-30%) short term fluctuations on both sides of the long range growth trend, yet even in the "valleys" the company has returned a profit. This is, to a considerable extent, due to the forewarning provided by profit planning and reporting based on the direct costing principle. The continual reporting of the breakeven point and the narrowing margin of safety as the bottom of the cycle is approached allow for advance planning of cost reductions instead of the all-to-common "crash program" approach. This reporting technique is, of course, only as good as the use made of it, but the combination can remove some of the sting of necessary staff reductions through gradual relocation and normal attrition of staff.

It might be argued that full absorption costing would accomplish the same objective. However, full absorption costing is wedded to the concept of a constant "normal capacity." This base, in practice, is often found to be variable due to the effects of product mix changes in production, availability of supervision personnel for extra shift work, judgment, etc. As a result, actual or expected capacity is usually considered "normal" and with this assumption any subsequent over-under absorption variances become rather meaningless.

(3) *Early Indication of Unfavorable Product Trends*—The sales of most companies are usually in a continual state of flux. Certain products are losing popularity while others are gaining. To ensure that there are sufficient new products to offset the losses in existing items is one of the more difficult problems faced by most managements. This is especially true of the electronics industry where the problem is aggravated by the widely diversified and highly technical product lines of most companies. It is not sufficient to just obtain individual product volume trends. A continual analysis of the interrelationship of new products to existing ones in terms of cost, volume and profit is essential to the early warning of undesirable trends. While it is only one of several areas contributing to market analysis, financial

reporting on a direct costing basis has played a valuable role in indicating certain of these trends. With the problem of varying levels of capacity, it is difficult to conceive how full absorption costing could have made the same contribution.

Since practical results are always the final test, two such undesirable trends and their corrective management action are reviewed briefly herein.

Several years ago the consolidated group of companies decided to expand its product line quickly by jobbing certain products purchased from other manufacturers. It subsequently found that the volume of these products had increased rapidly but, because of their high cost/low profit structure, the product mix effect on the total cost of sales had become quite unfavorable. Originally, when these products constituted a very minor portion of the total volume, it was considered advisable to handle them from a marginal return standpoint. However, when their volume grew appreciably, the effect on the overall profit return on sales became unfavorable. Management (in all the companies) reacted by redirecting some of its product research and development resources into developing similar or improved items for internal manufacture at lower cost.

Prior to 1959, the product development activities were largely conducted by the parent company in California. In recent years, it became evident from volume and cost trends that certain new products which had considerable market penetration in the U.S. had not been overly successful in Canada. This resulted in the establishment of a product research and development function in the Canadian company for the purpose of designing new products orientated to Canadian market demand. The demand was for such things as economical telephone and TV communication equipment for sparsely populated areas. This management decision is now bearing fruit in the form of two new products—a light route microwave system and TV program channelling equipment—both designed specifically to meet Canadian needs.

(4) *Management by Exception*—One of the common problems of management is to find time to develop major policies amid the confusion of day-to-day operating decisions. Another aspect of the problem is usually the difficulty in assembling the various managers together at one time for group discussion and consideration. As a result, major policy questions are often faced many times before final decisions are made with the end result that many of the decisions are made too late.

A good proportion of the company's management effort has been directed toward planning. In the past, the consolidated company has found that a periodic pooling of management abilities for the purpose of reviewing proposed profit plans has resulted in the solution of many major policy questions. While these conferences are time-consuming initially, the subsequent time saved through review of major variances only more than offsets the initial effort. This has led to financial reporting on a variance principle as shown in the accompanying statements.

The role of direct costing in variance reporting has been in providing accurate variance analysis of the volume-cost-price relationship. Using the accompanying variance statements as an example, the unfavorable profit variance for February was largely the result of three individual variances—the favorable volume variance, the unfavorable product mix variance and the unfavorable capacity cost variance in manufacturing. A review of the detailed variance statements quickly indicates that the additional sales volume was attributable to a large increase in sales of

supply items, whereas the sales of company products were lower than planned. The high cost of supply items has adversely affected the mix of the cost of sales so that the net effect on profit pickup (gross profit) was an unfavorable total variance. This example is typical of a set of circumstances often faced by accountants with much consternation; the company obtains a higher volume of sales but the gross profit is reduced. With conventional reporting it is difficult to ferret out the actual reasons for the apparent contradiction.

A further review of the capacity cost variances indicates that the unfavorable manufacturing cost variance is largely due to the unfavorable variances in production engineering and material price. The managers of production engineering and purchasing would have previously received detailed statements of the cost centre variances and material price variances so that a discussion of these variances with top management would bring out the fact that in production engineering there had been a large expenditure for jigs and fixtures required to produce a new product, while in purchasing a certain line of transistors had increased in price. Management reaction to these changes would depend on further analysis of all the circumstances.

This illustration of the variance approach indicates how management's time and effort can be conserved through direction to problem areas only.

It also indicates the ease with which profit pickup (gross profit) variances can be analyzed through the use of direct costing. In contrast, let us review the possible application of full absorption costing to these circumstances. The reduced proportion of manufactured products sold in February was the consequence of a reduced level of factory operating capacity in January. This, in turn, would have resulted in the under-absorption of fixed manufacturing overhead in January, when, in fact, the sales mix for that month was very favorable. This usual lack of direct correlation between a given period's production and sales (in terms of both volume and mix) means that full absorption costing cannot provide a logical determination of gross profit on sales nor a proper variance analysis of changes to it.

CONCLUSION

To conclude, it has been this company's experience that the complete application of direct costing in planning and reporting activities has been used to considerable advantage by its management. The principal objection to direct costing—that of its use as a method of valuing inventories—loses most of its significance in relation to the contribution made in improving the analysis of past and future volume-price-cost relationships.

New techniques in any field have always been subject to criticism. Perhaps this is as it should be in order that a true evaluation of the limits and advantages be made. The final evaluation of the technique of direct costing, with its related use of breakeven analysis, will only come from the assessment of actual results obtained by a good cross section of companies applying it.

For further reading

DIRECT COSTING, *N.A.C.A. Research Series #23*, April 1953.

DIRECT COSTING—WILL GENERAL ACCEPTANCE FOLLOW MANAGEMENT ACCEPTANCE, by R. E. Davies, *N.A.A. Bulletin*, Sept. 1960.

A CHANGE TO DIRECT COSTING, by E. J. Swartz, *Cost and Management*, Feb. 1960.

DIRECT COSTING OPENS THE DOOR TO PROFIT PLANNING, by Chas. Reitell, *N.A.A. Bulletin*, April 1958.

TOPICAL

comments

LOOKING AHEAD

Car insurance premiums may go up in 1962 if repair bills keep rising. Auto insurance claims in Canada are 9.2% higher this year than last and the industry has hired undercover sleuths to track down claims chiseling on repair bills that may involve as much as $20 million a year. *(Fin. Post, Oct. 8/60.)*

Another serious flu epidemic may be in store for Canadians this winter, virologists say. An inoculation program, carried out successfully in many Canadian industries during the 1957-58 outbreak, is likely to be the best insurance against lost staff time. For example, an estimated one-third of staff will be laid up approximately four days each. For a staff of 30, time lost for 10 persons at $50 each will be $500. Vaccine and medical service for 30 persons at $5 each will cost $150, for a saving of $350. *(Fin. Post, Oct. 1/60.)*

Work rules changes will be the central issue in next summer's bargaining in the auto industry, union officials predict. Company demands for changes are expected to overshadow both wages and fringe benefits in negotiations. *(Bus. Week, Oct. 1/60.)*

A new signature scrambling device, to be used in conjunction with EDP systems, has been developed to protect banks against passbook forgery, speed up customer transactions, and eliminate duplicate records. The device reproduces a passbook signature as an unrecognizable mass of broken lines. When the passbook is presented at the teller's window, the device returns the signature to its original appearance for comparison with the customer's signature on the withdrawal slip. *(RCA News.)*

Steam locomotives will have virtually disappeared from the Canadian railway scene by the end of 1960. Only about 1,500 are still in operation and they are rapidly being replaced by diesel engines. Last year, 446 steam units were retired, while diesels increased from 2,799 to 3,155. *(DBS, Oct. 7/60.)*

OF GENERAL INTEREST

Oil and gas in 1959 made up 71% of energy sources as compared to 25% for coal and 4% for water power. In 1928, this ratio was reversed, with coal accounting for 67½%, oil and gas 29%, and water power 3½%. *(Pacific Parader, Autumn, 1960.)*

The right to discipline employees is being surrendered by companies. A recent report shows that 90% of all union contracts provided for arbitration of unresolved labor-management disputes by an outsider. Most of these disputes concern discipline and in 54% of cases that go through arbitration, the company's decision to fire a worker is reversed or modified. In all other arbitrations involving discipline, management is set back in 45% of the cases. *(Ind. Relations News.)*

Canada's population is expected to hit the 18 million mark this month. As of Sep-

tember 1st, it was 17,930,000, an increase of 2.2% from a year ago and an 11.5% rise from the 1956 Census total. *(DBS, Oct. 7/60.)*

The World Bank or International Bank for Reconstruction and Development has loaned over $5 billions since its establishment in 1944. Here is the breakdown by purpose and area to the end of June 1960: *(Bank of N.S. Monthly Rev.)*

(in $ millions U.S., net of cancellations and refundings)

PURPOSE	AREA					
	Africa	*Asia*	*Australia*	*Europe*	*L. America*	*Total*
Electric Power	178	441	29	333	623	1,605
Transportation & Communications	420	617	132	69	312	1,550
Agriculture & Forestry	31	85	104	87	69	376
Industry	103	351	53	280	49	835
General	40	75	—	90	—	205
Development Loans	772	1,569	318	859	1,053	4,571
Reconstruction Loans	—	—	—	497	—	497
Total Bank Loans	772	1,569	318	1,356	1,053	5,068

ON THE PERSONAL SIDE

If a winter holiday is in your plans this year, here are some reasons why you may choose Mexico City:

- A wide choice of good accommodation is yours at very low rates. De luxe hotel rooms start at $8 a day single and a four-person suite with kitchenette-bar can be had for $3 a person. Top-flight, colorful restaurants abound, ranging from swanky night spots to Bohemian-type bar and the more conventional eating place.
- Sightseeing tours may take you through the many Aztec and Toltec ruins, to the scenic Popacatepetl and Lake Xochimilco, to Chapultepec Castle, the old silver mining town of Taxco, or on a Sunday visit to the Palace of Fine Arts for folk music and dancing.
- If you're a sports-minded type, you can take in a bullfight at one of Mexico City's two bullrings (good seats are about $7 each), golf at one of the most challenging courses in the Western Hemisphere, see a costumed rodeo, some fast, professional jai-alai, or merely bask in the sun at nearby Acapulco Beach.
- Best bets in shopping are pottery, Mexican wool serapes, leather and handcrafts. Prices are low and haggling is accepted in all but the expensive shops. Handmade leather briefcases run around $40 and a silver tea set that might cost $800 at home can be bought for $250 here.
- On the health side: beware of taking salads or tap water in unrecommended places, of eating or drinking heavily (the high altitude slows digestion), and it's wise to follow the local custom of taking a late afternoon siesta. Pack both light and heavy clothing. *(Bus. Week, Oct. 8/60.)*

How's your credit? Tops, if you're an executive or an accountant. Credit company tables show business executives head the list of good credit risks with 90.9% paying promptly. Following are accountants and auditors, 90.1%; retail and chain store managers, 89.9%; physicians, surgeons and dentists, 89.3%; engineers, 89.2%. Laborers and domestic help trail the list. *(Credit company surveys.)*

PERSONALS

H. S. WILSON, C.A., R.I.A., has been appointed Manager of Planning, Atlas Steels Limited, Welland, Ontario. Mr. Wilson was formerly Assistant Controller-Accounting, for Ford Motor Co. Ltd. of Canada.

J. L. DUNCAN, R.I.A., has been appointed Prairie Area Accountant for Gypsum, Lime & Alabastine Limited in charge of the accounting functions for the provinces of Alberta, Saskatchewan and Manitoba. Formerly B.C. Area Accountant in Vancouver, Mr. Duncan is now based in Winnipeg.

JOHN LOGAN, R.I.A., a former Chairman of the Toronto Chapter, has been appointed Controller of CFCF-TV, the newly licensed Canadian Marconi English language outlet in Montreal.

J. BERNARD VALIN, a former member of the St. Maurice Valley Chapter, has been appointed General Manager of the recently formed Linval Acceptance Corporation Ltd., Hull, Quebec. Mr. Valin was previously with St. Lawrence Credit Corporation, Trois- Rivières, Quebec.

J. R. MILLIGAN, R.I.A., C.G.A., formerly of the Toronto Chapter, has joined Northern Electric Co. Ltd., Communications Equipment Division, Montreal, as Accounting and Cost Development Analyst.

MARINO DROMBOLIS, R.I.A., formerly of the Montreal Chapter, has been appointed Business Manager of the Toronto Branch of Canadian Car Company Ltd.

S. L. HALL, Chairman of the Niagara Chapter, has been appointed Assistant Comptroller of Sarnia Scaffolds Ltd., St. Catharines, Ontario.

P. I. K. HARDING, R.I.A., of the Toronto Chapter, has been appointed Comptroller of Orenda Engines Limited, Malton, Ontario.

G. E. MUELLER, C.P.A., of the Toronto Chapter, has successfully passed the final examinations of The Certified Public Accountants Association of Ontario and has been granted the C.P.A. certificate.

J. M. C. HALL, R.I.A., C.P.A., of the Montreal Chapter, has successfully passed the final examinations of the Certified Public Accountants Association of Ontario and has been granted the C.P.A. certificate.

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THE ACCOUNTANT'S CONTRIBUTION TO PRICING POLICY*

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Pricing policy is one of the many areas of management interest the accountant must understand and appreciate before he can take an effective place on the management team. This assessment of the accountant's contribution to pricing policy reviews the pricing function, its characteristics and problems, and expands upon the information the accountant can provide to be of maximum assistance.

I—THE PRICING PROBLEM

WHAT IS PRICING POLICY?

Kohler's *Dictionary for Accountants* defines pricing policy, in part, as follows:—

"the body of principles followed over a period of time by the management of a business enterprise in fixing the selling price of its product or service; it contrasts with ad hoc price-making, characteristic of traders, which is likely to lack continuity with past or future price actions."

Included among the factors which determine pricing policy are:—

(a) Maintenance of a general cost-price relationship,
(b) Continuance of the firm in industry,
(c) Desire for expansion,
(d) Percentage of plant capacity utilized,
(e) Consequence of meeting or deviating from competitive prices,
(f) Consumer ability to substitute or to forego the purchase,
(g) Compliance with fair trade laws,
(h) Creation of goodwill.

A pricing policy, once it has been established, makes possible the fixing of firm prices either in specific amounts or by formula—with retention of sufficient flexibility to permit the use of judgment where conditions change or where special considerations require temporary amendment to the established formula.

The assistance that the accountant can render to management in formulating policy and conducting operations in this highly important field is greatly enhanced if he has a thorough recognition of the pricing function, understands the economic and

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political forces at play both internally and externally, and has the ability to see the related problems through the eyes of management.

Pricing policy is a product of top management, and original decisions, and changes therein, should be made at the highest level. The actual pricing procedure may be relatively simple, or it may be highly complex and require sound judgment and a high degree of business ingenuity to carry through.

In all cases, pricing requires the co-operation of many departments of the organization, upon which those directly responsible for pricing activities will rely for information and continuing collaboration.

INTERNAL AND EXTERNAL INFLUENCES AFFECTING PRICING POLICY

Many internal and external factors directly influence pricing policy, including:—

(a) The general economic situation prevailing currently,
(b) The investment required to produce any given volume—including research and market development,
(c) The availability of materials and labor,
(d) The costs of production,
(e) The reputation and reliability of the company and of its product and service,
(f) The demand for the product,
(g) The elasticity of the market,
(h) Competition.

Conditions affecting an industry or a member of that industry may be complicated and varied and pricing policy must be tailored to meet the requirements of each situation.

Profits must be included in the price, but the margin of profit considered acceptable may vary with different segments of the business, with classes of products and with changing conditions.

PRICE CHANGES

Pricing policy must be sufficiently flexible to permit consideration of new conditions, but the price of any product should be changed as infrequently as possible. The timing of the change and the consequent psychological reaction should be watched carefully. The effect of deviating from competitive market levels should be studied carefully—with full consideration to the extent to which prices can be controlled by the seller, or are influenced or limited by the buyer.

New products, also, often require separate treatment in establishing their initial or early prices.

Forces bringing price changes by one producer within an industry will usually exert similar pressures on other producers, resulting in a change of price industry-wide. If a price change in one enterprise is not followed shortly by competitors, difficulties may arise and complaints, cancellations and reduction of volume may seriously affect customer relations and profits.

PRICING FOR MAXIMUM PROFITS

Understanding of the economic theory of pricing is necessary in building selling prices.

A reduction of price will usually bring an increase in volume and vice versa. In an "elastic" market, the ratio of the change of volume is greater than the ratio of the change of price. In an "inelastic" market, the reverse holds.

It is important, then, that the market be surveyed carefully to determine at what price and volume maximum profits may be expected to result.

Consideration must also be given to the fact that undue widening of the profit margin will eventually attract additional competition.

ROLE OF DEPARTMENTS IN PRICE CONTROL AND PROCEDURE

The co-ordination of the knowledge and efforts of all departments and administrative personnel of the organization in providing and assessing information is necessary for the establishment of a sound pricing policy.

The sales department, for example, might favor a trend toward price reduction in order to increase its volume of sales. Decision could not be made without determining from others

(a) the extent by which the anticipated reduction in cost would bring an increase of volume, and

(b) whether a change of quality, design or material content would be possible without affecting the marketability of the product and would bring about the desired reduction of cost.

The departments of the organization which contribute to a sound pricing policy include the following:—

Management—must provide leadership in arriving at final decisions affecting the pricing policy.

Research—must survey the market in the light of probable short and long-range conditions to ascertain trends and to project sales volumes at various price levels.

Sales—must assess the potential market and determine the sales effort necessary to secure the desired sales volume.

Finance—must plan for the financial resources necessary to provide adequate plant capacity and working capital.

Manufacturing—must organize productive capacity required for anticipated sales volume and must also assess the effect of changes in volume on cost.

Accounting—must determine the costs of production, distribution and administration in accordance with the cost concept adopted, and be able to forecast the effect on these costs and on profits of changes in volume and price.

ROLE OF THE ACCOUNTANT

The accountant is primarily responsible for compiling the costs of production at actual volumes or at volumes estimated by management. In addition, he should be in a position to compile the effects of changes in volume on costs and profits, to determine costs under alternative methods of production, and to so guide those engaged in the pricing function that they will know or may estimate within very close limits of accuracy the profit results at any level of price.

Not only is he responsible for determining costs for the purpose of current pricing, but he is in a position, through the compilation of additional data as production carries on, to provide management with detailed information on costs and profits so that they may be continuously analyzed, compared and controlled.

II—RELATIONSHIP OF COSTS AND PRICES

COMPONENTS OF PRICE

The price charged to a customer must, in all regular circumstances, include:—

(a) Factory cost of production,
(b) Selling, distribution and administrative charges, and
(c) Margin of profit.

Many other factors influence prices besides cost but, in the long run, prices must cover cost if the supply of the product is to be maintained and the company is to stay in business.

Management must, in all cases, be fully conversant with cost and with the many other relevant factors and must have the assurance that current pricing patterns are soundly based.

RELIANCE OF PRICES ON COSTS

One writer has stated that "pricing and costing are, or ought to be, synonymous." Perhaps that is an overstatement, a cost accountant's ideal. Perhaps it is a thesis that is not workable in all circumstances, particularly where the producer does not have the advantage of adequate cost information or where other influences are of particular importance. However, in the overall process, costs must be recovered in the price, with an acceptable margin of profit, if we are to continue to market the product.

It would be ideal if the company were always in the happy position of being able, for all its orders, to build up the direct and applied costs, to add a percentage to cover its profits, and to so establish its selling price on a cost-plus basis. Such costs might be determined on an actual or historical basis, or might be pre-determined on a standard basis with labor, materials and supplies included at standard and with overheads allocated on the basis of reasonable estimates of plant capacity utilized.

However, it might not be so simple and other factors might demand prior consideration. For example:

(a) It may be that the market is a buyer's market, and the price may be restricted by the extent of the buyer's desire to acquire the product;
(b) It may be that price is limited by:
    (1) the availability of substitutes,
    (2) the costs and selling prices of competitors,
    (3) anticipated future costs, or
    (4) other factors.

In other words, the prices obtainable may be limited and the company may be faced with the necessity of either finding means of limiting its production and distribution costs to the point that will ensure the realization of an acceptable profit, or of vacating business in that line.

We must agree that the tying in of prices with costs must be done intelligently and discreetly.

(1) Too close a reliance on cost could produce a needlessly low price and less than the maximum available profits;
(2) Cost may not produce a price acceptable to the purchaser or applicable to all products;
(3) It may be that the costs of our competitors are more effective in establishing our price than are those of our own firm.

If present costs are to be used directly in pricing, these costs must be reliable and must include all cost items.

It is possible that some departure should be made from the current costs as shown by our accounting records in determining those which should be used for pricing purposes. For example:

(a) Depreciation on the records may be on a reducing instalment basis, determined primarily through income tax or other considerations, while depreciation for cost purposes may be more applicable on a straight-line basis, and may even be justified on replacement values of the assets, rather than on their initial purchase price;

(b) Interest on capital investment may be included in cost for pricing purposes, and may not be recorded as cost on the accounting records; or

(c) Costs may be better determined on the basis of budgeted future production rather than historically on the basis of past or present production.

It may be that certain costs normally considered as applicable for regular domestic sales are not considered necessary for export sales. Such items might include charges falling in categories similar to the following:

— Major or long-term plant repairs and replacements,
— Special bonuses, pensions and welfare payments,
— Life insurance on executives or loss of profits insurance,
— Interest on bonds or other borrowings,
— Bad debts, donations, advertising.

On the other hand, certain new costs such as special types of packing, labelling and export cases would need to be added.

It is also agreed that complete costs might not give the information necessary to establish prices on a short run or on a highly competitive basis, particularly:

(a) If the producer is faced with an unusual reduction in volume;

(b) If contacts with customers must be maintained on any basis;

(c) If workmen must be kept employed or lost to the firm; or

(d) If the firm must consider as an alternative, a temporary closing down of production in whole or in part.

What then is, or should be, the relationship between cost and selling prices? Certainly costs are important, though there are many other factors that may at times be of equal or of greater importance. Costs are certainly a partial determinant of selling prices. They provide a resistance to the undue reduction of prices, and in some cases they may be the all-important factor. The degree of reliance of prices on cost will vary with the prevailing circumstances, but in all cases management must be kept fully informed, and should have available actual, reliable and up-to-date cost data.

PRICING AND VOLUME

Let us assume that the probable volume of production and sales has been established, costs have been prepared for production at corresponding levels and prices have been determined.

In most cases, an increase in volume would result in a reduced unit cost of production. Similarly, a reduction of the unit selling price would bring about an increase in the volume which can be sold. Now:

(a) To what extent will unit costs be reduced with an increase in volume?
(b) To what extent will the sales volume increase with a reduction in price?
(c) Will it be more profitable to produce and sell the higher volume at the lower price, or the lower volume at the higher price, or what is the right mixture of (1) price and (2) production and promotional costs, to realize acceptable long run profits?

Suffice it here to comment on the contribution which can be made by the accountant.

Management should have from the accountant, certain important basic information, which would include the following:

— The cost of each product, actual or predetermined, at the estimated volume of production,
— The product or model that is the most profitable, and others in order of profitability,
— The extent of the set-up operation and the amount of the set-up cost,
— The fixed charges for service, administration, paperwork, and other operations,
— Effect of smaller runs on the cost of material, labor, idle time, handling, etc.
— The effects on cost and sales of an expansion in plant capacity,
— The effects of substantially increased production on labor supply and costs, quality control, promotion and distribution charges.

The accountant attempts to provide that information to management as and when it will be most useful. In general, his research and analysis will determine the effect of the interplay of changes in price, volume, product cost, fixed charges and variable costs on each other and upon the resulting net profit.

III—COSTS AND COST CONTROL

HISTORICAL COSTS

Costs include all charges incurred in the production, sale and distribution of the product and of the administration of the organization. Direct materials and direct labor are, in most cases, almost fully variable as the volume of production changes.

Manufacturing expenses comprise (a) those charges which are a function of time rather than volume and (b) those which vary with or in proportion to changes in production. Many factory expenses of a semi-variable nature include both fixed and variable elements and these elements can be segregated with reasonable accuracy.

Through the employment of a properly organized cost system, factory costs of production may be reduced to those applicable to a single unit of product.

To factory costs must be added such other charges as:

(1) Selling and distribution expenses,
(2) Administration, financing and general overhead, to give the "all-inclusive cost" or the "cost to make and sell."

These expenses can also be divided with some degree of accuracy into their fixed and variable elements.

Selling, distribution, administrative and financial expenses include all charges, not allocable as costs of the manufacture of the product, which are necessary to market and deliver it, to finance the organization and to administer the enterprise.

These operating expenses include selling salaries and commissions, advertising and sales promotion, warehousing and order assembly, packing, shipping and delivery, travelling, executive and office salaries and expenses, bad debts and the carrying of accounts receivable, credit and collection, billing, interest, and other charges.

The selling group and the administrative group of expenses may be added as separate percentages to factory costs, based upon the standard or anticipated volume of production.

Management would also find extremely useful data which would show the relative profitability of:

— Various territories,
— Classes of customers,
— Different lines of product,
— Alternative methods of customer solicitation.

This, of course, means that distribution and other items of expense may be allocated to these respective groups on some equitable bases and their percentage of factory cost or selling price established, or a standard unit cost for each such activity established for each type of production.

STANDARD COSTS

Standard costs are determined in advance of production and reflect complete costs of production as they should be under good manufacturing conditions without additions for avoidable waste of materials or for inefficiencies of production. They are based upon the estimated capacity of production on a long term basis, and do not vary with seasonal changes in the anticipated volume. They even out the variations in expenditure which are liable to occur from one period to another.

Standard costs are therefore of great assistance to management:

(a) in formulating price policies,
(b) in preparing quotations for prospective orders,
(c) in furnishing estimates enabling the sales department to stress lines of product with the greatest margin of profit, and
(d) in stabilizing prices throughout the fiscal period.

MARGINAL OR DIFFERENTIAL COSTS

Special conditions frequently arise which indicate that it might be beneficial to make exceptions from time to time to normal pricing policy. If a company is faced with a restrictive market and the volume has not been up to expectations, some particular or unusual addition to present volume may be attainable at a reduced price and might prove acceptable or even advantageous.

Let us consider such a situation reduced to simple terms. The budget of X company for the first three months of the year based on estimated production, considerably below capacity, is as follows:

Sales—200,000 units		$100,000
Manufacturing Costs		
Direct Materials	$16,000	
Direct Labor—Dept. A	12,000	
Direct Labor—Dept. B	12,000	
Direct Labor—Dept. C	4,000	

Superintendence	6,000	
Indirect Labor	5,000	
Operating Supplies	4,000	
Power	4,000	
Repairs and Maintenance of Equipment	8,000	
Insurance and Taxes	3,200	
Depreciation of Equipment	4,800	
Rent, Light and Heat	9,000	
	88,000	
Less Scrap Recovery	4,000	84,000
Gross Profit		16,000
Selling, Distribution and Administrative Charges		12,000
Net Profit		$ 4,000

Management has just received a request to quote on a possible new order for 100,000 units—at the lowest possible price. This order was not anticipated and has not been provided for in the budget. Management is very anxious to secure the order and asks the accountant to compile data which will indicate the lowest price at which the order can be handled without loss to the Company.

The material content of all units and the direct labour cost per unit in Department A will remain uniform. Labor for the additional volume for Department B will be 10¢ per unit and for Department C 4¢ per unit. Operating supplies and scrap recovery will vary fully with production. Other costs will not vary except for selling, distribution and administrative charges, which it is estimated will increase by $1,250. The following statement is produced by the accountant:

	Present Budget 200,000 units	Additional Costs to cover possible order for 100,000 units
Manufacturing Costs		
Direct Materials	$ 16,000	$ 8,000
Direct Labor—Dept. A	12,000	6,000
Direct Labor—Dept. B	12,000	10,000
Direct Labor—Dept. C	4,000	4,000
Superintendence	6,000	—
Indirect Labor	5,000	1,250
Operating Supplies	4,000	2,000
Power	4,000	1,000
Repairs and Maintenance of Equipment	8,000	2,000
Insurance and Taxes	3,200	—
Depreciation of Equipment	4,800	—
Rent, Light and Heat	9,000	—
	88,000	34,250
Less Scrap Recovery	4,000	2,000
Manufacturing Cost	84,000	32,250

Selling, Distribution and Administrative Expense	12,000	1,250
Total Cost to Make and Sell	96,000	33,500
Net Profit	4,000	—
Sales	$100,000	$33,500
Projected Selling Price per Unit	50¢	33.5¢

In this case the cost attributable to the additional business is $33,500, or 33.5¢ per unit, i.e.—the difference between the cost of producing the budgeted volume and the cost of producing that volume increased by the possible new order. The schedule shows the *additional* cost that must be incurred if the new order is taken and which need not be incurred if it is not taken.

The decision as to whether the particular order should be accepted would be influenced by factors other than the determining of the differential cost. Factors such as (a) the effect upon the present market of making available to one buyer units at a reduced price, (b) the possible retaliatory action of competitors, (c) the knowledge that pricing on the basis of differential costs, which include variable costs only, may be acceptable under certain special circumstances on a short-range basis so long as it is assured that regular sales absorb in full both the fixed and variable costs and provide the margin of profit necessary to carry on operations.

Long-range planning demands normal pricing based upon complete costs and other factors. Short-range planning may allow some deviation from principle.

With a knowledge of the differential cost, the Company would be in a position to decide whether or not it would be advantageous to release certain of its goods at prices lower than the going market rate. Anything received in excess of the variables included in the differential cost will help to absorb the fixed overhead and will make a contribution to net profits.

It may be advisable to accept prices for a short time even if they fall *below* variable costs. For example,

(a) if the alternative is a closing down of the plant or of a department with consequent special costs of such closing down,
(b) if there is the probability of a loss of established markets,
(c) if the temporary disappearance of brand names from current public contact would affect their value, or
(d) if the termination of employment of workmen might make it difficult or impossible to reassemble an adequate labor force when times improve and so effect future efficiencies.

The accountant could establish for management the relative financial advantage of (1) maintaining operations or closing the plant, (2) closing one or more apparently unprofitable departments, and (3) production of one of two or more alternative products, but the understanding of these figures should be coupled with an appreciation of other attendant factors which could be of paramount importance.

It must be understood that in long-range planning, the cost and a margin of profit must be recovered, and any reduction in an established price must be accompanied by an increase in volume or a reduction of cost. However, in short-range planning,

many unexpected, uncontrollable conditions must be met and some exceptions to the pricing rules may be quite beneficial so long as they are not too drastic or cover too long a period.

In certain instances export markets have been supplied with goods priced, to some extent, on a differential cost basis, while domestic markets are served at prices based on complete cost and allowing for a normal profit margin.

Direct Costs

Budgets based upon historical manufacturing costs provide for costs and hence selling prices at an anticipated volume of production. If actual production differs from this anticipation, the cost of the product, determined on a historical cost basis, will change.

Let us visualize a simple process plant in which one type of unit is manufactured. If demand is seasonal, or if realization varies considerably from the budget, the periodical volume of production will vary and the unit cost and suggested selling price, if based on cost, will also vary.

Let us consider, as an example, a firm with a budgeted capacity of 20,000 units and the actual performance of this firm for periods A and B.

	BUDGET		ACTUAL			
			Period A		Period B	
Volume	20,000 Units		16,000 Units		24,000 Units	
Direct Materials	$160,000	$ 8.00	$128,000	$ 8.00	$192,000	$ 8.00
Direct Labor	120,000	6.00	96,000	6.00	144,000	6.00
Manufacturing Expense—						
Variable	140,000	7.00	112,000	7.00	168,000	7.00
Fixed	100,000	5.00	100,000	6.25	100,000	4.167
Factory Cost	520,000	26.00	436,000	27.25	604,000	25.167
Selling & Administration 10% of Factory Cost	52,000	2.60	43,600	2.725	60,400	2.517
Total Cost	572,000	28.60	479,600	29.975	664,400	27.684
Profit—10% of Total Cost	57,200	2.86	47,960	2.997	66,440	2.768
Suggested Selling Price	$629,200	$31.46	$527,560	$32.972	$730,840	$30.452

Taken literally, we have the information that in Period A, when the volume is lower than was anticipated, the selling price should be increased and in Period B, when the volume was above expectations, the selling price should be reduced. We can see, therefore, how the statement that "the graveyard of business is filled with the skeletons of companies that attempted to price their products solely on the basis of cost" might arise.

The correction of this anomaly may be attempted by the use of "direct costs"—the

costing method in which (a) the product is charged with only those costs that vary with volume—that is, direct materials, direct labor and variable manufacturing expenses, and (b) all those costs that are a function of time, for example, supervision salaries, maintenance men, building charges and depreciation, would be excluded from the product cost and included as "period" costs in general overhead. Direct cost is, therefore, prime cost plus variable manufacturing expense. Inventories of work in process and finished goods would be valued on a direct cost basis, and all fixed expenses would be charged to operations in the period in which they are incurred, without any part of these fixed expenses being allocated to inventories.

Presuming the same total selling price as in the budget above, let us compare costs at budgeted sales volume, but with actual production at 24,000 units, (a) on the absorption cost basis and (b) on the direct cost basis.

	Absorption Costs		Direct Costs	
Sales—20,000 units at $31.46		$629,200		$629,200
Cost of Goods Sold				
Direct Materials (24,000 units)	$192,000		$192,000	
Direct Labor	144,000		144,000	
Manufacturing Expense—Variable	168,000		168,000	
Manufacturing Expense—Fixed	100,000		—	
	604,000		504,000	
Less Inventory—4,000 units	100,667	503,333	84,000	420,000
	($25.167)		($21.00)	
Gross Profit (or Marginal Income)		125,867		209,200
Manufacturing Expense—Fixed		—	$100,000	
Selling and Administrative Expense at budget on Sales		52,000	52,000	152,000
Net Profit		$ 73,867		$ 57,200

The unit cost price for all volumes under the direct cost method will include variable costs only and will be $21.00 in the above case, that is, materials $8.00, labor $6.00 and variable manufacturing expense $7.00. The closing inventory of work in process will be valued on this basis and will total $84,000, or $16,667 less than under the absorption cost basis, and hence the net profit will be similarly reduced because of this lower valuation of inventory.

Factory costs charged against sales are now uniform and are not distorted by high and low production changes. However the fixed charges of manufacturing must be included in selling prices by an additional percentage or unit allowance, as all costs must be recovered.

Advocates of direct costs consider that they provide more useful data than absorption costs in almost all circumstances, and cite the following:

(a) Direct cost information and the direct cost form of statement appear to follow more closely management's thinking and provide information which

enables it to understand better the result of operations from month to month.

(b) Direct cost statements show the immediate effect of changes in sales volume and of changes in product mix, give management greater facility in determining the effect on profits of alternative actions, and are much more helpful in profit planning and in providing the basis for both short- and long-range policy decisions.

(c) The marginal income by product classifications shows how much each is contributing to fixed costs and profits and shows the relatively desirable products. Where available capacity exceeds the current volume, profits will be increased by any business which carries a positive marginal income. Where production is at capacity, products chosen for continuance will be those with the largest effective marginal income ratios.

(d) Management is given greater opportunity to study separately the variable and fixed portions of costs. Variations from the budget of both variable and fixed costs are more easily explained.

(e) Profits are not affected by changes in the quantities of inventories.

One producer advises that his company's direct cost program has further benefitted him in a number of ways which were not anticipated. He says:

"(a) Costing information is easier to develop and, as a result, our financial statements are issued from three to five days earlier,

(b) We are forced to make a close study of our fixed and variable expenses and we now have far more accurate information to use for special studies,

(c) It is now easier for us to develop flexible budget information, changes in our budget, and long-range planning information."

There are, however, some shortcomings:

(a) It is often difficult to differentiate between fixed and variable charges as many are of a semi-variable nature.

(b) Direct costs assist more in short-range than in long-range planning.

(c) Direct cost data could lead those without complete understanding to disregard the necessity of recovering, somewhere in the price structure, fixed costs in full.

(d) There is no certainty among professional accountants and income tax authorities of the acceptability of inventory valuations and profits on a direct cost basis in the company's financial statements.

These are difficulties that can usually be overcome or are less important than the advantages. Many are not applicable at all if direct costing is confined to internal reports and records and not extended to the annual financial statements.

Direct cost information is particularly important to the pricing personnel. Every organization finds itself faced with varying problems and the knowledge available under the direct cost plan facilitates informed price decisions on both short- and long-range bases.

IV — THE ACCOUNTANT'S CONTRIBUTION

The accountant's assistance to management in the important field of pricing requires not only a sound knowledge and understanding of all items of cost, but an

appreciation of the many internal and external economic and political factors which exert their influence on the pricing area.

The accountant's contribution should include:

(1) The establishment of actual costs of production—historical or projected—complete or on a differential or direct cost basis;
(2) Comparison of actual costs with standards, budgets or previous costs;
(3) Measurement of the effect of changes in volume on costs;
(4) Measurement of the effect of changes in prices and/or volumes on profits;
(5) Assistance in estimating the impact of proposed price changes on competition, and the possible substitution of new products;
(6) Assistance in establishing pricing policies for new products, with consideration for estimated rate of market acceptance, ease of competitive entry, investment necessary to produce, patent protection, and the other factors;
(7) The compilation of information necessary to the development of a sound approach to pricing, leading to acceptable competitive and profitable prices.

A well-informed pricing group in any organization has a great advantage over one in competition which has not been supplied with adequate pertinent information. Additional to his direct influence on pricing, the accountant is able to render other services valuable to the pricing function. These might include:

Determination of the company's relative productive and economic position in the case of:

(a) replacement of present machines and equipment by new;
(b) alternative methods of production—machines vs. handwork, machine A vs. machine B, etc.;
(c) the manufacture or the purchase of a part of the product or of component parts or of patterns or tools;
(d) decision to discontinue the production and sale of certain commodities;
(e) decision to discontinue, or to direct to new products, certain departments of the organization;
(f) the most effective and profitable utilization of presently available plant capacity;
(g) proposed expansion or reduction of plant capacity.

The accountant should be equipped to discuss the needs of management and to compile the kinds of information which may be of greatest value for the many and varied purposes which that information may serve. The accountant is and should be an integral part of the management team in the task of formulating and carrying out the function of intelligent pricing.

For further reading

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Books in Review . . .

MANAGEMENT FOR THE SMALLER COMPANY

Edited by Elizabeth Marting, American Management Association, Inc., New York, N.Y. pp. 399. $9.00.

Reviewed by J. F. Abercrombie, R.I.A.

Management for the Smaller Company is the work of 35 authors and was reviewed in its formative stage by 18 critics.

The authors write from experience and training and the critics are presidents of small and medium companies.

The result is an authoritative study of management in breadth and depth. The book illustrates the advantages and disadvantages of the smaller company and examines the various facets of its subject under the headings:

Laying the foundations
Management is people
Emphasis on product
Keys to plant efficiency
The marketing effort
Insuring profitability
Special resources

Size is relative to the background of comparison and the book takes the opportunity to go deeper into management considerations than might be expected from the title. Some of the resulting material provides samplers for the executive suite.

Failure is much more educational than success
Finance when things are good
Good control anticipates problems
Create the financial history which attracts good investment

Not infrequently a business appears to "run itself" and, if the chill winds of competition, technical improvement or market change begin to blow, management becomes aware, perilously late, that it needs but lacks the skills to survive. *Management for the Smaller Company* might have averted this situation or suggested the help required.

The book gives no magic elixir and if anything, the discourses re-emphasise that the tried and true fundamentals, with which many readers will be familiar, are still valid. What is of interest is how practitioners interpret and use the fundamentals.

The result is not always agreeable. One author states his premise that in considering automation the stockholders, employees and customers must be satisfied equally. He later says, "A few girls were retained . . .", "The girls remaining . . .", ". . . the employees have all come to realize that automation means not merely change but **progress**." Comments on his "fair share" principle and **progress** from the employees NOT retained and NOT remaining are not included.

The student, in particular, should bear this book and its references in mind as supplemental reading. It is an enlightening report of management in action.

I am encouraged that "the human element" will keep this antiseptic science from becoming sterile.

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Cost and Management

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Editorial Comment . . .

Progress and Perspective

IN THIS AGE of paradoxes, one is faced with a barrage of novelties and pronouncements so divergent and complex that it becomes very difficult to maintain a reasonable perspective. It has never been easy to sift the wheat from the chaff, to extract the truth from the passing fancy, so that in retrospect one may say that good judgment was used in assessing a confused situation.

Today the world seems to be preoccupied with the changing aspects of things. Change is said to be the handmaid of progress, and the world must progress, so the theorem goes. It has been said that nothing is so permanent as change itself, but this is not to say that all change is progress. With this emphasis on constant shifting, there has emerged an irreverent denial that there is anything permanent or eternal. While it would be decadent to suspect or object to all change, it would seem equally irresponsible to accept the new without question. If, then, one is to act, judge and participate in the passing scene, he must compare the new with the old that it replaces. In this way we establish benchmarks as guideposts of the past and present; these in total become our philosophy, our rule of living, and part of our heritage. These rules may not be absolute for all time, but some of them have and will survive the test of many generations. For us to accept a change that would negate these basic beliefs, would be blind and foolhardy unless, by reason and judgment, we are able to see in the new something greater and more lasting than in that which it replaces.

Everyone in a society is faced with weighing the merits of new and different alternatives; it may be in our private lives, in politics, in a profession, or the business world. It is the responsibility of the individual to use his powers of reasoning. The amount of thought and judgment one uses will be exemplified in the course of action that he chooses, and the sum total of all such decisions will be reflected in a business, in society, and in a country.

In the field of business today, the watchwords are change and progress. If one questions the adoption of a new technological advance, of a more precise measurement, or a more functional design, the accusation that is usually levelled at such

staid, unprogressive people is that they are standing in the way of progress and turning the clock back. In some cases such a charge is true, but history has recorded many men who have had the courage to examine the apparent benefits of a change only to find them far outweighed by detrimental side-effects. There are wise industrial leaders today who will postpone or cancel a project or process that from all scientific appraisal and measurements, would be materially profitable to adopt but, on weighing other considerations such as the immediate effect on a community or on personnel, it would be too severe to warrant immediate change. It is in the exercise of such judgments, from this vantage point of a broad understanding of basic concepts and objectives, that a man becomes both a patron of progress and a guardian of ancient wisdom.

In the closing weeks of another year, everyone is faced with both the benefits and problems that come with the confusion of developments. It may be well for us to pause in our busy living and ask ourselves if we are prepared to meet the implications of these changes in our society, or if all these changes are really progress in the long run. Over the centuries, it has become a practice at this time of the year to reassert man's brotherhood to man. Whether or not one adheres to Christianity, one must admit that the guarding and recitation of this belief always produces at least a temporary period of happiness and goodwill. In repeating the best wishes of the season, one can hardly imagine any change in the name of progress that would make this ancient custom obsolete.

PERSONALS

R. RANDALL HERRON of the Montreal Chapter has joined A. M. Kidder & Co. as Manager of the Trading Department. Mr. Herron was formerly with Haskell Elderkin & Co., Chartered Accountants.

M. E. COOK, Chairman of the Eastern Townships Chapter, has been appointed Controller of his Company, Sherbrooke Machineries Ltd., Sherbrooke, Quebec.

A. W. PIERCE has been promoted to Area Manager, District of Kitchener, by his Company, Marchant Calculators Ltd. Mr. Pierce was a Director of the Niagara Chapter.

L. J. SCARROW, R.I.A., of the Toronto Chapter was awarded his C.P.A. certificate at the recent graduation ceremonies of the Institute.

C. S. MacLAREN, R.I.A., has been appointed Comptroller of Standard Tube and T.I. Ltd., Woodstock, Ontario. A former member of the Kingston Chapter, Mr. MacLaren was with Phillips Electrical Co., Ltd., Brockville, Ontario.

CORRECTION

We wish to apologize for an error that occurred in the October issue of *Cost and Management*. In that issue, Medal Winner W. A. Mitchell was described wrongly as "Assistant Comptroller of The Canada Starch Company". Mr. Mitchell's correct title is "Assistant to the Comptroller."

INCENTIVE SYSTEMS AND THEIR APPLICATION TO COST PROBLEMS

By T. H. Nicholson,
Partner,
Stevenson, Jordan & Harrison, Inc.,
Atlanta, Georgia.

If costs are not to outstrip selling prices, productivity must always be improving at a steady rate. The application of incentives to methods of payment, as outlined in this article, is a means not only of increasing productivity but of distributing the rewards of productivity among all those who share directly or indirectly in its improvement.

INCENTIVES may take one of two basic forms. They may be an incentive to do better or a deterrent from doing worse. Whichever way it is looked at, an incentive is basically a stimulant—a reward in some form or another for achieving, or attempting to achieve an objective.

Efficiency of operation is one of the ways by which management can combat the ever-increasing cost of production and maintain its place in a competitive world. Efficiency can only be achieved by a continual study of production methods. Improvements in output rates are not attainable only by getting the operator to work harder or faster; indeed, methods improvements will often result in lighter labor tasks, thereby creating opportunities for more output for the same or perhaps less human effort. In any event, as part of the over-all responsibility of management to all functions of the business, the gains which may be achieved through improved techniques, processes, procedures or operational methods may justifiably be shared with those who provide the physical means of creating the desired results, as well as with those who provide the necessary finances and the executive and administrative brain power.

INCENTIVE SYSTEMS

The opportunity which an incentive system provides for those more or less directly connected with production, to earn more money for more output, is a means of sharing with these direct operators some of the benefits which may be expected to accrue from the changes or improvements made.

An incentive system must be more than a mere measure of operating performance times from which output goals are set. It must also include a procedural study and an examination of all the conditions surrounding the job so that full advantage may be taken of every possible methods improvement before the measuring standards are set.

There are countless types of incentive systems; almost every company has its own plan and its own specialized features. Basically, as far as manufacturing operations are concerned, there are two types—straight piecework and the standard allowed

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Mr. Nicholson is a Partner in the management consulting firm of Stevenson, Jordan & Harrison, Inc. Born and educated in England, he was one of the first cost consultants in that country. He has been associated with his present firm since 1936.

hour plan. All kinds of variations on these two themes are practised. Either of these plans may be on an individual or a group basis. The larger the group, the further away the direct effort of any one individual is from the final result of this incentive.

THE STRAIGHT PIECEWORK PLAN

Straight piecework is one of the oldest forms of incentive. It undoubtedly goes back to the time when the incentive plan was developed solely for squeezing a higher working pace out of the operator. It was common practice in the early days of straight piecework for the foreman to set prices based largely on the past records of some similar job or operation. One of the supposed advantages of a straight piecework plan was the ease with which direct labor costs could be figured. Obviously, on a strictly piece basis the direct labor cost had to be the piecework price irrespective of volume. The introduction of minimum pay rates began to destroy this very simple cost picture. The establishment of guaranteed expected earnings levels for differing operations did still more to complicate a very simple story. Furthermore, with the continual improvements in operating results by the introduction of more and more automation and mechanical production aids, the direct labor element of cost gets less and less, and the indirect or service elements increase.

In the days when straight piecework was the rule, it was usual to apply overhead expense rates as a percentage of labor costs. This brought other complications along with it. A demand for increased take-home pay to meet rising living costs means that all piecework prices had to be boosted. This changed the base on which the overhead rate was applied, and a complete revamping of the cost system became involved.

THE INTRODUCTION OF TIME AND JOB MEASUREMENTS

The desire to develop related pay scales which reflected in some measure the degree of skill, dexterity, training requirements, etc., of the job, so that those doing the most important work had, for equal effort, an opportunity to earn a higher rate than others, did much to bring about the introduction of time as a basis of measurement and job pay rates as a means of converting these times to money.

Job evaluation as a technique for determining correct base rates is a first step towards insuring that, where it is still required to use a straight piecework payment plan, based on time standards, the time elements will be converted to price in an equitable manner. Job evaluation measures and rates the various factors involved in becoming proficient in any job; it measures the job, not the operator, nor yet the time for the job. Once all jobs have been rated and placed in sequence, a complete picture of the evaluation of each job from the lowest to the highest is obtained and a related basis for conversion of time to money is available.

Time is a much more stable basis of output calculation than money. Owing to differing base rates, any comparison which has to be made under a money system always has to be converted back to time by the application of the hourly money rate before a clear evaluation can be effected. Time has to a large degree replaced money prices and the development of base times has now become a highly skilled profession.

STANDARD TIME PLANS

The use of elemental standard time data is fairly common practice and the development of these data as a means of avoiding continuous time study observations of

each job, and insuring uniformity of results, is an accepted procedure for the basis of a sound incentive plan. Predetermined standard data are frequently used but there is some evidence that the element definitions are too broad and in some instances limit their application. If predetermined standards are to be used, great care in selecting a suitable system must be used.

The use of time as a basis of measurement is universal; uniformity of comparison is easy, and the application of time to cost problems is a natural sequence. Whether or not the time standard should incorporate an allowance for standard hours earnings, or whether it should be an expected performance time, is of interest, in so far as this paper is concerned, only to the extent that this factor may affect the cost system and the figures resulting therefrom.

INCENTIVES FOR INDIRECT LABOR

The use of incentive payment plans for direct operators is a normally accepted procedure. Not enough thought has been given to the application of incentives to indirect labor operations. This takes us back one step more, to the process of budgeting and the use of control statements. A cost system should provide both information about product costs and a means by which the elements comprising these costs can be controlled.

Flexible budgets which form the basis of period control statements must, if they are to be truly effective, recognize all the factors which may affect operating expense. The assignment of specific duties to indirect personnel is a first step towards this end. A study of the factors which determine the work load of an indirect operator can be obtained by breaking down the duties involved. Thus the duties of a repair man assigned to a group of machines may be found to be related to a number of different operating conditions. These may consist of specification of material being processed, quantity of material in terms of different factors, weight, gallonage, yardage, machine hours of operation, or operator man-hours, etc.

The extent of wear and tear on each different part of a machine may be affected by one or more of these factors during the operating cycle. Only a close and careful study will reveal this and give the relationship between the basic cause of wear and the degree of maintenance required. The development of indirect labor standards which recognize the cause and degree of attention required provides a basis for both accurate control and possibly for an incentive payment plan. Flexible budgets can be developed to reflect the actual conditions occurring, and unassigned time becomes a variance for consideration and action. Far too little attention has been devoted to this area and there are tremendous possibilities for the measurement of indirect labor utilization if engineers will give the time to making the study. Anything which can be satisfactorily set up as a sound, reliable control base can be used also in some form or other for incentive payment purposes. In addition to this, it is possible that these same standards can be applied directly to product costs, if not individually, then at least in groups within a range. The use of averages in cost calculation and the general spreading of what is frequently termed indirect labor can have disastrous results where there is a wide range of product size and quality. Too often the very significant effect of the difference in cost of indirect labor over a wide range of similar products is lost because of the over-all spreading of this item arbitrarily across all products.

INCENTIVES AND THE COST SYSTEM

The first and most important connection between a good incentive plan and the cost system, at least in so far as product cost calculation is concerned, is in providing a sound base for the computation of standard labor costs.

Labor standards used for incentive purposes, whether they be designated direct or indirect, if they can be applied to individual products or groups of products in varying ranges will provide the basis for calculating both labor and overhead costs. A number of variables will, however, enter into this calculation. The extent to which these variables will influence product costs is dependent on the type and detailed nature of the incentive plan. Any plan which includes in its structure some form of stepped incentive when a predetermined point is reached, either by application to the incentive earnings ratio or to the base rate, creates special problems. This kind of arrangement is not by any means an uncommon occurrence.

Before considering how to deal with these variations in incentive plans, it would be well to give some thought to the use made of cost figures. In simplified terms, a cost may be regarded as a means of measuring the profitability of the product. This would generally be true whatever the type of cost system. The accuracy of this measure is obviously dependent on the extent of the accuracy of the system itself.

One of the objectives of being in business is to make a profit; there are others, but this is the one we are concerned with just now. If the cost of the product can be predetermined, then the potential profit can be predetermined. The only way in which a cost can be predetermined is to specify all the conditions pertaining to that cost. If these conditions are not maintained, then variances occur and with a well-devised cost plan these variances point directly to control responsibility. This is the simple concept of a standard cost plan and is equally applicable whether direct costs or "whole costs" are used.

STANDARDS AND INCENTIVES

Incentive systems can be designed to help set some of the required standards. It is the variations within the incentive system itself which can create difficulties in cost calculations. No matter how complicated the incentive plan, no matter how many exceptions to a straightforward system are involved, the most satisfactory way of handling the problem is to set standards and let the variations fall where they will.

The term "set standards" means just that. The use of past averages as a basis for future costing is not sound policy. This merely builds into the product cost inefficiencies and weaknesses which may be existent in the incentive system. If management is to receive guidance for future policy making, then the cost of the inefficiencies and failures of the incentive plan should be brought out periodically in terms of total dollars of expense to the company.

It would normally be expected that standards for labor costs would be set by an industrial engineering or some similar equally competent department.

COST PROBLEMS

There should be a standard labor rate of pay determined according to a properly constituted evaluation procedure. This rate may be comparatively far removed from the rate actually being paid. In practice it is possible that differing base rates are

being paid for the same job. This situation often arises where job conditions may have changed over the years and adjustments in rates have been possible only as new operators came along.

A standard must also be developed for the expected efficiency or bonus earning level. These two factors are not always the same. Incentive standards may be theoretical, providing for accepted efficiency level, but past practices and earnings levels may be such that a bonus earning rate in excess of an agreed efficiency ratio must be allowed. Such a situation is frequently handled by incorporating the prescribed efficiency ratio in the time standard, and the additional earnings factor in the base rate. Whichever the case, the only way to demonstrate to management the cost of this policy is to draw off the applicable variances in total dollars and maintain the cost on a true standard basis.

This calculation is normally relatively easy to make. The over-all total variance is simply the difference between the actual pay and the standard pay which would have resulted from the same output if the standard conditions prescribed in terms of both efficiency and rates of pay had been operative.

It is important to remember that the function of the cost department is to provide management with all the information possible which will enable them to make sound decisions. An over-all labor variance as described above will not do this. The effect on the company in terms of dollars for variations due to nonstandard efficiency operating and nonstandard pay rates must be separated and reported as such.

This kind of calculation requires clerical effort. It cannot be achieved without some additional work. The question is how *little* extra work can provide this answer and how *much* in dollar value to the company is this knowledge worth. The first point is a matter of organization and careful study. Having to do two extra calculations in place of one doesn't necessarily mean doubling the work. If the approach to the problem is one of desire to find the right answer at the lowest cost, then ways and means of achieving the results by short cutting and thorough job analysis can often be found, in other words, by the use of some well thought out methods procedures in office routine.

It has been suggested earlier that to get full use from any variance analysis it must be produced by responsibility. In the foregoing case the variances expressed by departments or, if need be, by broad categories of labor groupings or operations, would probably be sufficient to give an answer which would stimulate action. Under such circumstances the calculations involved can frequently be made in totals rather than by individual jobs or even individual operators.

An incentive system usually provides in one form or another for interim compensation to beginners or learners. This is another feature which can create cost problems. Generally, special allowances are added to the incentive standards. These allowances decrease over certain periods of time according to the job and skill required, until at the end of the training period the operator is working with the approved standards.

Averaging the cost of learners in with other direct labor operations is not a satisfactory answer. There is no reason why the variance on learners cannot be drawn off separately and the effect of prolonged learning time or failure to follow the learning program disclosed.

The use of flexible budgets as a base for determining overhead expense rates and

for developing period control statements is an extension of the thinking already discussed in relation to incentive pay systems and their association with costs. If the cost problem is examined as advocated here, entirely from a standards angle, the only remaining question is one of mechanics and this is never beyond solution.

A cost computed on standards and each standard confined to one feature of cost, such as material price, material quantity, material specification, operating efficiency, rates of pay, etc., forms the basis from which all the essential variances can be calculated and when this is accomplished then, no matter what the incentive plan, its effect on the company and the company policy can be made effective. The more complicated and confused the incentive plan, the more essential it is to show management how much the plan is costing and in what areas, and the less chance there is of incorporating the results of the plan in the product cost and trying to pass its effects on to a competitive market pricing situation.

INCENTIVES FOR CLERICAL WORKERS

One of the most lucrative areas for cost reduction through the use of incentives is in the clerical operations. Experience has shown that the average employee performing clerical tasks at a flat rate of pay operates with an efficiency even lower than the non-incentive production worker.

The operations performed in such departments as billing, order, tabulating, typing pools, etc., can be readily standardized and measured. A considerable amount of element standard time data has been developed for clerical tasks. This includes the operating of office machines, such as calculating, addressograph and postage metering machines, in addition to the manual tasks of copying, posting, filing, etc.

The study of existing clerical methods and work flow should be made before establishing the standards. It has been found that substantial gains can be made by methods improvements before even obtaining the additional benefit through work effort.

SUPERVISORY INCENTIVES

Reference was made earlier to a more scientific or engineered concept of indirect labor allowances for incentive payment purposes, and the use of standards which have been compiled on this basis for application to flexible budgets.

Supervisory incentive plans related to savings achieved against budgets, while difficult to administer, if properly devised, can be extremely effective. There are some very important fundamentals which must be incorporated in any such plan. First amongst these is that the supervisor be held accountable only for those items which he can control and which can properly be measured against him. Any item, even one over which the supervisor might exercise control but which cannot be precisely measured in use against the department, cannot be included in the plan. Distributions of certain expenses on some predetermined basis serve no purpose for control and assuredly could not be used in computing incentive pay. Likewise the basis upon which the allowance factor is calculated must be one which truly reflects the conditions. Reverting to the example of indirect labor standards, if these have been properly set up to provide an adequate and fair computation for wage payment, then the budget allowance calculation based on the same standards for control purposes must also be adequate for good supervisory control. Provision must

also be made in the calculation of control allowances for conditions arising which are outside the supervisor's jurisdiction. This can be a very controversial point and some acceptable means of arbitration must be devised to meet these cases which will inevitably arise. Decreasing volume levels always make control more difficult, but it is at this point that the supervisor becomes most valuable. Good control on high volume is not difficult; good control on low volume even with good flexible budgeting calls for the exercise of ingenuity and skill. Reassignment of duties, care in processing sequences, rearrangement of schedules, and many other devices can be used if there is the will and desire. A well-balanced supervisory incentive plan will provide a stimulant.

EFFECTS OF INCENTIVES ON PRODUCTION CONTROL

The impact of the incentive system on production control could be the entire subject of a separate paper. Provided the principles of a sound production control plan are followed, the type of incentive system will not necessarily have any serious effect on the system.

Assuming the production control system is designed to maintain work load schedules ahead on individual machines or groups of machines, either for all machines or just bottleneck operations, the loading and unloading of these machines can be done by using figures developed from the incentive plan. If the incentive plan is one which utilizes allowed hours, these hours can be used to both load and unload. The latter figure is one which would normally be compiled in some form for statistical purposes and, therefore, requires no more than analysis by whatever grouping the production control plan may call for.

The important figure to know in any production control system is the number of weeks of work ahead of bottleneck operations. Most incentive plans can be adapted to give this figure without a lot of conversion work. If loading and unloading is done in the medium used for the incentive system and the resulting load expressed in this same medium, then by keeping information over a period of time on a moving average basis which indicates the average weekly production in terms of the same medium, a simple division will always disclose how many weeks of work are represented by the load balance no matter in what terms the load balance may be originally expressed. This would still be true even if the original medium were dough!

INCENTIVES FOR SALESMEN

One old established form of incentive plan is the payment to salesmen of commissions on sales value. This has become so much an accepted universal procedure that it is almost sacrilege to suggest a change.

The problem should be considered from the point of view of what is the objective of the incentive? It is intended to stimulate action which will benefit both the employee and the company. The payment of commission on sales value might well benefit the employee but not necessarily the company. Profit is not usually proportionate to sales value, so that an incentive which creates high volume in terms of sales dollars will not positively create the highest dollar profit.

This fact raises the question "What *is* the correct way to measure profit?" If the cost system is sufficiently accurate and reliable, the measure of profit on any individual line would be the difference between selling price and product cost. If a company

wishes to improve its profit earning ability by selective selling, then it would seem logical to pay commissions in proportion to the profit earning ability of each product or line.

Under a "whole" cost plan, that is, one in which all expenses whether they be fixed or variable are included in the cost, the total cost will vary with changes in volume. An item which may start out at the beginning of the year as a high profit earner and therefore rank for a high ratio of commission may not be such a leader if sales fail to materialize. Under a whole cost plan, a drop in volume would increase the cost and reduce the profit. In fact, if products were arranged in sequence of profit earning ability at the beginning of a year when the measure of profit was the result of using whole costs, based on a predetermined volume, it is almost certain that the sequence would be entirely different at the end of the year when actual volume were known. This would then mean that all the commission rates would have been paid incorrectly. No doubt it is this volume effect on costs and profits which has prevented the development of what is clearly a logical approach to the problem.

A PROPOSED PLAN FOR SALES INCENTIVES

The answer lies in using profit contribution in terms of total dollars as the basis for the incentive. Profit contribution disregards the effect of fixed expenses in cost because the cost comprises only the variable items of expense. Profit contribution is the difference between the variable cost of the product and the selling price. Once this figure is established, the difference between selling price and variable cost remains the same, no matter what the changes in volume may be.

Each product can be given a point rating commensurate with its profit contribution dollars. By this means actual dollar earning figures are not disclosed. The only thing that is disclosed is the relative dollar earning ability of the lines and, since the object is to promote the sale of the highest dollar earning products, this factor is an important feature of the incentive plan.

This fundamental change in payment can engender a feeling of suspicion amongst the participants. It will undoubtedly change the earnings of those taking part. Some will not do so well and others will do better than previously. One way to meet the problem is to calculate commission payments on all sales exactly as previously, and to accumulate this into one total amount. This amount can then be distributed to the salesmen in proportion to the dollar profit contribution rated earnings of each man.

While this approach has the advantage of assuring the salesman that the company is paying out exactly what it would have done in total under the old plan, it also has the disadvantage that the salesman does not know what his commission earnings will be until the figures are all complete at the close of the month. A situation could arise where a salesman sold exactly the same quantity and value of each item in two different months but draw quite different commissions due to the over-all distributable total commission being different or to the relative portion of the particular salesman's profit contribution rated earnings being different.

A straight commission based on a dollar profit contribution will give much less trouble and be more satisfactory in the long run.

Although concentration for selective selling purposes is generally governed by profit contribution earning ability, and this plan is based on such a premise, there may be other considerations involved. Limitations of raw material, shortage of

manufacturing capacity, policy decision to develop a certain line and many others may dictate that a rating factor be given to some product which is not strictly in keeping with its dollar earning ability. By this means, effect may be given to any desired sales policy.

Management decisions are never so simple as just concentrating sales on the lines which show the best profit contribution. There are always a number of questions which must be answered when considering any problem. If that were not so, it would be very easy for almost every one to become a good manager. It is the cost accountant's function to help create good management by providing the right answers to these questions.

For further reading

CONTROLLING COSTS WITH INCENTIVES, by G. E. McCarthy and J. J. Plocar, *Factory Management and Maintenance*, July 1953.

EXPERIENCES WITH INDIRECT LABOR INCENTIVES, by P. V. Cropsey, *N.A.A. Bulletin*, March 1955.

A NEW APPROACH TO INCENTIVES, by H. J. Furness, *The Cost Accountant*, Feb. 1957.

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The Editor's Choice

GETTING THE MOST OUT OF OPERATING BUDGETS
by P. M. Chiuminatto, N.A.A. Bulletin, Aug. 1960.

Despite the recent flair for sophisticated and modern management tools, this author says that a sound budgetary system "serves as the ground rules" for the continued successful existence of a business. He develops this article like a man well versed in the subject by pointing up ways to make budgets more effective.

AN ACCOUNTING SYSTEM FOR A SMALL CPA FIRM
by W. C. Dale, Journal of Accountancy, Aug. 1960.

This article is a very useful guide for any professional firm engaged in practice. The system, outlined and well supported by illustrations, is designed to:

1. Accumulate total hours, total standard costs and billable fees for each engagement performed.
2. Provide for classification of the type of service rendered in each engagement.
3. Provide for the accumulation of fees earned by each staff member, partner or firm and provide for the accounting and utilization of each member's or partner's time.
4. Provide adequate information for income tax and financial reporting.

This is generally the type of information that accountants recommend as a minimum requirement for the proper control in most types of business. It should be gratifying to the profession to see sound accounting principles applied to an accounting firm.

MENTAL HEALTH IN INDUSTRY
Advanced Management, Sept. 1960

This whole issue is devoted to the important problem of mental health in industry. There are seven articles written by well known men, most of them doctors in the field of psychiatry. This is interesting reading and may be covered in a few hours. It is a problem that management must face; it is also a sickness that knows no barriers.

WHEN IS PRICE REDUCTION PROFITABLE?
by G. E. Griffin, Harvard Business Review, Sept.-Oct. 1960.

This article explodes the often-voiced remedy of lower prices to stimulate lagging demand and hence profits. The author explains very clearly with examples the circumstances that dictate price reductions. He explores the sensitivity of demand to price, and the effect of volume change on price. There are examples from the automobile industry which illustrate the effect of a price decrease resulting in greater revenue from sales but netting a smaller profit. This is very clear writing on the inter-relationship of the fixed-variable nature of cost, the effect of varying prices on demand and the overall result of this variable combination on short term profits.

THE DIMENSIONAL PRINCIPLE IN THE ANALYSIS OF VARIANCE
by D. Lipsky, N.A.A. Bulletin, Sept. 1960.

This article discusses the nature of variances and the usual method of using a basic figure or period as a yardstick for measuring later comparable data. The author points out that the current analysis by rate and quantity leaves something to be desired, because variances are sometimes the result of more than two factors.

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The Economic SCENE . .

by W. Allan Beckett

Year End Business Review

SLOWDOWN IN SIXTY

THE CANADIAN economy entered 1960 on a high and rising trend. The Gross National Product reached a new peak of $35.6 billion during the first quarter of the year. Industrial production had risen more than 20 points from its 1957 recession low. Employment had registered a more modest increase, but was still on a high and rising level. Both consumer sales and exports had attained new records, while business spending for new plant and equipment showed signs of continuing recovery. And business firms were continuing to build up inventories in anticipation of a further rise in sales.

However, as the year progressed disquieting signs began to appear. While new records were being established in the first three months of the year, some of the early warning indicators began to weaken sharply. The stock market dropped some 25 points between December 1959 and March. New orders for machinery and equipment fell off by about 20%. The work week began to shorten as winter unemployment rose to a new post-war peak. Sensitive commodity prices began to weaken.

By April, it was clear that the boom was beginning to give out. The after effects of the American steel strike had not come up to expectations and our exports to that country began to drop. Housing (see *Economic Scene,* November 1960) had plunged sharply and the ensuing recovery in new starts ran into heavy going. Moreover, business spending for new plant and equipment began to fall short of intentions expressed at the beginning of the year. Consumers, sensing the impending weakness, increased their spending slowly. The result was that business inventories began to appear heavy in relation to ultimate sales and some paring of stocks was introduced.

MID-YEAR DECLINE IN OUTPUT

At mid-year, the Gross National Product had retreated to the $35.0 billion level, a sharp drop from the peak reached in the opening months of the year. A major feature of this decline was an 11% drop in corporation profits.

Monthly data beyond mid-year suggest little or no recovery in total output through the year end. At the latest level, industrial production (August) had declined seven points. Unemployment (September) exceeded seven per cent of the labor force, after seasonal adjustment. The prospects were for a winter peak of three-quarters of a million unemployed. The export sag, the decline in business spending and the sluggishness in consumer expenditures showed no signs of moderating.

Among the leading indicators that may be casting their shadow into 1961, only two have shown signs of expansion. New housing contracts have risen from their low last March, but rather hesitantly. The stock market staged an autumn rally, but part of this may have been due to the impact of the Democratic victory in the United States.

New contracts for business plant, new orders for machinery, the average work week, and commodity prices were still on the downgrade late in the year. On the basis of their performance, one would not look for greater than seasonal gains in activity until at least April of 1961—and even a recovery then cannot be guaranteed.

A LONG RECESSION?

Three aspects of the 1960 recession are worth extra comment. First, the rates of decline among the sensitive indicators following the first quarter peak, were in general larger than those that took place in the opening months of the 1957 recession. Second, the declines appeared to affect more industries, more processes, more areas and more activities than was the case in earlier periods of weakness. A review of the historical record suggests that recessions which turn out to be more prolonged and more severe than the average, are usually more widespread and begin to reveal greater weakness in their earlier stages.

On the basis of the historical averages, one might expect the recession to run its course by March, and the extent of the decline to be, in the case of industrial production, about seven per cent. If the current signs are any guide, this decline may last longer, until well into the spring, and possibly into the late summer. In this case, a decline of ten-twelve per cent in production would not be excessive.

The third comment concerns the course of financial activity. The impending weakness showed up early in interest rates, which, granted, had risen to very high levels in 1959. Both long and short term rates declined through the first nine months of 1960. However, they rose seasonally near the year end, as the expansion in the money supply failed to match the temporary surge in the demand for funds.

What is of interest, is that the declines in interest rates, and the growth in the money supply, failed to arrest the declines. At the same time, government fiscal policy had not shifted (although readers should follow the session of Parliament which began November 17) to try to stem the growing weakness.

Thus by the year end, the elements of economic strength which held so much promise as the year began had practically all disappeared. Both the international situation, the beginning of recession in the United States and Europe, and the domestic political situation appeared unlikely to stimulate a recovery at any early date in 1961.

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ORGANIZATION FOR MATERIALS MANAGEMENT

By Dean Ammer,
Executive Editor,
Purchasing Magazine,
New York, N.Y.

This article advocates a new type of materials management organization better adapted to management control and the automated plant of the future. Instead of the conventional division of responsibility by function, the author suggests a unified approach to materials management by product or stage-of-manufacture cutting across traditional division lines. It is an organizational approach that can be extended to other areas of responsibility, such as accounting.

MATERIALS management problems occur with almost routine frequency in the best run manufacturing companies. But they are rarely called by that name. Instead, management thinks only in terms of the functional activities that are associated with materials management: purchasing, production or material control, traffic, shipping, receiving, and materials handling. Thus a materials management problem involving scheduling of production requirements becomes a "production control problem" and one concerned with supplier relations becomes a "purchasing problem". This approach is not illogical either; the typical manufacturing company divides materials management responsibility among several distinctly separate functional departments.

These departments have varying organizational status. Purchasing is normally regarded as a basic organic function of the business; its manager almost always reports directly to top management. This is also often the case with traffic—particularly in companies where transportation costs are relatively important. Production control is generally under manufacturing; its manager usually reports to the factory manager or superintendent. Shipping, receiving, and materials handling rank still lower in the typical organization; they are frequently subordinate units in the production control organization.

MATERIALS MANAGEMENT—A BASIC FUNCTION

Although responsibility for materials management is divided, there are good reasons for considering it a basic function of the business—separate and distinct from the other basic functions of engineering, marketing, manufacturing, and finance. Materials management is often thought of as being a part of the more basic function of manufacturing. This is not true. In fact, in some respects, materials

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management can be regarded as being more basic than manufacturing. There are companies, for example, that do no manufacturing and purchase products made for others for resale. These companies still require a materials management organization, although they have no need for a manufacturing organization.

Manufacturing and materials management are so often confused, of course, because parts of the materials management job are actually performed by groups in the manufacturing organization in most companies. However, the functions are definitely separate. While manufacturing is concerned with the management of the men and machines needed to make the product, materials management is concerned with the flow of material used in the product or consumed in its manufacture.

OBJECTIVES OF MATERIALS MANAGEMENT

Since materials management is a basic function of a business, it is possible to formulate objectives for it and measure performance by the effectiveness with which these objectives are met. Individual materials objectives and their relative importance vary from company to company. But most companies would probably agree that the following could be considered basic objectives in materials management:

1. Minimum prices for all parts, materials, and transportation services purchased.
2. Quality of purchased material and parts that is more than adequate to meet manufacturing standards.
3. Minimum inventory investment; this, in turn, requires high inventory turnover.
4. Continuity of supply of material; this, in turn, is the result of efficient planning of requirements and having suppliers who meet delivery promises.
5. Minimum costs of handling inventory and carrying it in stock.
6. Training and development of skilled materials personnel.
7. Minimum payroll costs.
8. Good records. (This is a primary objective in materials management mainly because of the custodial nature of many materials management activities.)
9. Favorable relations with suppliers.

Many companies would have additional materials objectives including, for example, favorable reciprocal relations with suppliers who are also customers, economic make-or-buy decisions, etc.

BALANCE MATERIALS MANAGEMENT OBJECTIVES

It is significant that the material objectives are inter-related. A given objective can usually only be achieved at the expense of some other objective. For example, an all-out drive to achieve the objective of minimum prices for materials would probably bring sacrifices in the achievement of quality and inventory turnover objectives. It might also affect the objectives of continuity of supply of material and favorable supplier relations.

Thus, successful materials management is mostly a matter of evaluating the relative importance of various objectives at any given time and carrying out a program that keeps them in proper balance. The objectives vary in relative importance with time. For example, at a time when a business is expanding rapidly and financing is difficult to obtain, high inventory turnover may be the single most important materials objective. In this case, it will probably pay to purchase

materials in the smallest possible quantities even if price premiums are necessary. (The premium, of course, can become so great that optimum achievement of the inventory turnover achievement simply isn't worthwhile; with efficient materials management, objectives are kept in proper balance on every transaction.)

The very same company with high inventory turnover as the key objective when sales are rising rapidly might emphasize other objectives when business tapers off and cash is more plentiful.

UNIFIED FUNCTION GIVES BEST RESULTS

For successful materials management, each individual transaction should be reviewed in terms of its effect on over-all objectives. Organizationally, this involves dividing up the transactions in such a way that each can readily be reviewed to make certain it conforms to current materials policy. A logical way to do this would be to assign responsibility for achievement of all materials objectives to a single group and then divide the work within this group so each transaction can get the attention it deserves.

But this is not the case in practice. In practically every company, no single individual or department can be held responsible for simultaneous achievement of all materials objectives. Instead, individual groups are totally responsible for achievement of certain objectives and they share responsibility for achievement of other objectives. For example, purchasing and production control usually share the objectives for continuity of supply. This can create confusion. But worse yet is the case where one group is primarily interested in one objective and another group concentrates on a conflicting objective. For example, there is bound to be conflict between a production control department intent on boosting inventory turnover and a purchasing department concerned with getting lower prices by buying in larger quantities. In such cases, it is often a matter of coincidence if the relative importance of the conflicting objectives is properly evaluated in relation to overall materials policy.

Effective management is mostly a matter of determining what must be done and then assigning definite reponsibility for performing the function. This principle is violated in most companies' materials management programs. While no one will dispute the fact that materials management involves the rational balancing of interrelated and often conflicting objectives, few companies actually follow this approach in practice. As a result, it is a rare company indeed that is in a position to measure its material performance. And, even if it could measure performance, the result would not have too much meaning since no one activity can be held responsible for that performance.

If materials management is so important, why is it that so many managements apparently do not worry a great deal about the problems of measuring its effectiveness or even whether or not its objectives are being achieved in proper relation to each other? The reason lies in the history of American industry and materials management.

DEVELOPMENT OF THE PURCHASING FUNCTION

Fifty to 75 years ago, it was a rare company indeed that had a separate purchasing or production control function. In some respects this wasn't so bad, for most companies did, in effect, have a unified approach to materials management. In fact,

they usually had the equivalent of a number of semi-independent materials managers. Each manufacturing department head performed most of the functions associated with materials management. He determined his own requirements and dealt with his own suppliers. Presumably, the prevailing management philosophy (to the extent that there was one) was that no one knew what he wanted from a supplier quite so well as the foreman who actually used the materials. So every foreman was his own materials manager.

Gradually, changes were made. A trend toward greater functional specialization developed. The shop foreman was gradually stripped of many of his powers. In the materials management sphere, the idea took hold that there might be a difference between knowledge of how to specify and use a particular material and knowledge of how to buy that material. In other words, management began to believe that buying was a separate and distinct skill which should be handled by a specialist.

And so separate purchasing departments were set up to serve all other departments that specified and used materials. Initially—before management was completely convinced that buying was a separate and distinct skill—these purchasing departments weren't too strong. While they did become a focal point for concentrating all of a company's purchasing power, most buying decisions were actually made outside the purchasing department and merely presented to purchasing for processing on an after-the-fact basis.

Gradually the purchasing agent became more influential. Since he was the focal point of all purchases, in time he became better acquainted with supply sources than the requisitioners he served in manufacturing and engineering. And as management gradually accepted the idea that specialized skills were needed for effective procurement, the notion that the requisitioner with his expert knowledge of products and processes would be the prime determinant of supply sources was gradually abandoned.

Purchasing was tremendously aided in its growth by the simple fact that, in most manufacturing companies, costs of purchased materials and services are about double total payroll costs and usually account for about 50% of the sales dollar. Relatively small savings in purchase cost could have a substantial effect on profits. For example, let's look at a hypothetical company with sales of $10,000,000, purchase volume of $5,000,000, and profits of $500,000. In such a company a mere 2% reduction in purchase costs would save $100,000 and boost profits by 20%.

As management became conscious of purchasing's profit-making possibilities, it became progressively more generous when departmental budgets were approved. Higher potential people—university graduates with training in engineering and business administration—began to appear in purchasing departments. This, in turn, has had a "multiplier effect" since highly-trained purchasing personnel are able to exploit purchasing's profit potential as never before. Thus, more and more, purchasing is becoming an organic function of many businesses and is, in turn, developing its own specialists within purchasing—value analysts, purchasing economists, etc.

GROWTH BRINGS GREATER DEPARTMENTALIZATION

Meanwhile, what happened to the other areas of material management while this development was taking place in the purchasing function? The answer is, of course, that they developed too. Production control functions were gradually taken

away from foremen and centralized in staff departments. The traffic function was virtually created from scratch. So in every manufacturing company with more than a few hundred employees, we have some version of the highly functionalized organization structure outlined at the beginning of this article. It is only in the company that is too small to be able to afford such highly specialized activities that there is anything resembling a unified approach to materials management. Such a company might well have a one-man purchasing, production, control and traffic department. If the man is sufficiently versatile, he can do an amazingly effective job on all three functions. He needn't be concerned with conflict of objectives and it's relatively easy for his boss to measure his performance.

The ideal materials organization in the larger company is one which utilizes specialized skills and still preserves the unity of objective found in the small one-man materials organization. We have already demonstrated that this is not the case in the typical materials organization that has evolved to date.

As the materials job grows and more personnel is added, new semi-independent functions are created. The materials job is broken up into functional elements and these are assigned and re-assigned to newly created work groups. Often these groups don't even have common top level supervision. For example, purchasing and traffic have been largely successful in disassociating themselves from manufacturing and are often entirely separate activities organizationally. Production control, on the other hand, is definitely a part of the manufacturing staff. This separation between production control and related functions, in itself, helps create resistance to any type of organization where work is not divided on a functional basis.

A NEW CONCEPT OF ORGANIZATION

But, were it not for established custom, there is no logical reason why this should be the case. For example, let us imagine that we are managing a company with a one-man materials organization that is growing rapidly. We must plan on expanding our materials organization ten or twelve-fold over a period of time. And we are not going to imitate other companies' materials organizations unless they can be made to justify themselves.

In the early stages of our growth, we won't have to make any fundamental organization decisions. We can expand simply by giving our materials manager an assistant or a clerk. But we soon reach the stage of a more fundamental organization division. There are two basic ways in which we can divide the growing workload: by function, and by stage-of-manufacture, product, or commodity.

At this stage, if there is a basic realignment of work by function, the conventional materials organization structure slowly takes shape with future growth.

But let us suppose that we divide work by stage-of-manufacture, product, or commodity instead. Which of these three methods we select depends largely upon the rest of the plant organization and the nature of the products manufactured.

Division of work by commodity promotes specialization of buying skills. It is, to some extent, always necessary since commodities like water and fuel must be purchased on a plant-wide basis.

Division of work by finished product helps relate the materials management effort more directly with profit-and-loss on specific products. This approach is particularly advantageous if other functional groups are also organized by product. In such cases,

it is possible to have "profit teams" in which each functional group is represented.

When there is but a single product, the "team" approach can still be used. The only difference is that organization is by stage-of-manufacture rather than by product.

As our materials organization grows, let us suppose that we simply keep subdividing the growing work on a product, commodity, or stage-of-manufacture basis. We will then wind up with a number of similar materials groups. Each resembles our one-man materials department in the small plant. A group can, of course, have more than one man in it without violating our principles of division of work. It can also include an assistant or clerk—but in no cases will we let an individual group get bigger than three or four people.

Each group will become a completely self-contained materials management team. It will start with a bill of material, schedule its own requirements, manage its own inventory, make its own purchases, and measure its own performance.

HOW THE NEW ORGANIZATION WOULD WORK

The areas of responsibility of each group can be precisely delineated and related to product, stage-of-manufacture, or commodity. In a plant making several distinctly different products, all three organization approaches might be used.

For example, the materials manager for productive raw materials would determine requirements and purchase all raw materials. He would also supervise the operation of the productive materials store room. In this case, division of work would, in effect, be both by stage-of-manufacture or by commodity.

The manufacturing departments for the various products made within the plant would be served by an appropriate number of materials managers. Division of work would either be by stage-of-manufacture or product depending upon the individual situation.

The commodity approach would certainly be followed for most factory and office supplies. In this particular case, a materials manager would be responsible for their procurement and would also oversee the operation of the stock room.

Conceivably, one materials manager might be able to handle all of the productive materials requirements for a given product. Or several managers might be needed for a product with division of work by stage-of-manufacture. Even if there were several products, it might pay to have a single materials manager in charge of packaging and shipping all products, especially if their packaging requirements were similar.

Developing this hypothetical materials organization, we have seen how the purchasing, production control, stores, and shipping functions would be handled. But what about traffic, receiving and materials handling?

Each materials manager and his clerk could handle at least part of the functions now handled by the traffic department including even routine auditing of transportation invoices, etc. In fact, it is the writer's opinion that it would be desirable to have a maximum of the routine traffic activities handled at this level.

However, there is no doubt whatever that even an organization of modest size can usually make profitable use of a skilled traffic specialist working on *non-routine* transportation and traffic problems. If routing of out-bound shipments is a major

problem, this specialist would require a staff to assist him. To that extent, we are more or less stuck with our "old style" organization.

The same principle applies to the receiving activity. Obviously it must serve all materials activities so it must also be functionally separate. The scope and importance of the materials handling activity naturally varies widely with the product and process. However, it is safe to conclude that it would have to be organized like the traffic function. In a smaller company, one man might handle both traffic and materials handling problems.

THE OVERALL ORGANIZATION

What we wind up with in our hypothetical plant is a unified materials organization with a minimum (rather than a maximum as in the conventional organization) of functional specialization. Typically, we might have as many as eight or ten materials managers each of whom is responsible for all phases of the materials cycle—from initiation of requirement to consumption or incorporation into the finished product. Helping him perform his job, and acting strictly in a service capacity are separate receiving, traffic and materials handling activities.

Heading up the entire organization would be a plant or company materials manager. All junior materials managers would report to him as would the supervisors of the traffic, receiving and materials handling activities. In addition, the plant materials manager might have a staff of one or two research experts who devote themselves to providing technical assistance to the individual materials managers, developing improved materials management techniques and controls, etc.

Although it would admittedly be very difficult to introduce this type of organization into a going concern, the fact remains that it might very well be worth the effort. And, in some cases at least, this approach may even be mandatory in order to cope with our increasingly complex technology.

ADVANTAGES OF THE "DE-FUNCTIONALIZED" APPROACH

Among the advantages of this "de-functionalized" approach to materials organization are:

1. Improved Communication. Several rather "deep" departmental organizations are replaced with a single "flat" organization. The result is shorter lines of communication and less bureaucracy.
2. Decentralized Decision-Making. With responsibilities more clearly defined and fewer channels of communication, practically all decisions on day-to-day problems should and can be made by the individual materials managers. With the "flat" organization, it becomes, as a matter of fact, difficult for the plant materials manager to become involved in routine decisions even if he were so inclined.
3. Objective Performance Measurement. Since each materials manager is now wholly responsible for the entire materials cycle in his area of responsibility, it becomes possible to devise objective controls to measure his performance. He becomes responsible for meeting all of the inter-related objectives of inventory turnover, low obsolescence, low prices, dependable deliveries, etc. His performance, in turn, can be evaluated by comparison with other materials managers performing similar functions.
4. Profit-Oriented Organization. Each materials manager identifies himself to

a much greater extent with the overall objectives of the organization. He becomes conscious of the inter-related effects of his decisions and is less prone to think only of his own specialty and disregard related activities. For this reason, the materials manager is more likely to be developed into a general manager than his predecessors ever were.

5. High Morale. Psychologists long ago discovered that a job can be made more interesting if it is made less specialized. People like to see the fruits of their labors. This applies to materials management too. The materials manager responsible for entire materials cycle can better see the results of both his brilliance and his blunders and will thus get greater satisfaction from his job.
6. Lower Costs. This type of organization should require both fewer people and less paperwork than conventional materials organization. The plant-wide materials manager can have an extremely broad span of supervision since he can effectively manage with objective performance measurements. This should help cut supervisory costs—but this may be offset by the fact that high calibre and correspondingly well paid men are required as materials managers. The greatest saving—and it should dwarf all the others—will come from the superior materials management that is possible only when objectives are clearly spelled and the organization is planned to meet these objectives.

DISADVANTAGES OF THE DE-FUNCTIONALIZED APPROACH

The new approach to materials management also has its shortcomings. The most important one is the lack of qualified personnel in most companies. Only the very best buyers and production control supervisors have know-how (or the willingness and the ability to learn) needed to become materials managers. It will take time to recruit and train the people needed.

One possible solution might be to stretch out the period of transition to the new type of organization. This will permit gradual training of personnel and allow more time for adjustment to the new organization. If a company makes a number of products, the new approach might be tried at first on just one of them. If it works, the personnel problem will slowly solve itself since one of the major advantages of the materials management approach is that it does permit people to get broader, more comprehensive training at a faster rate than is possible in the conventional materials organization. Clerks or assistants to the materials managers can rapidly be exposed to all phases of materials management and promotion to materials manager can be reasonably rapid for the individual with ability.

Another objection to the new approach to materials management is that it might well dilute the advantages of commodity specialization in purchasing. For example, where there used to be just one buyer dealing with suppliers of fasteners, there might be four or five materials managers dealing with these same suppliers.

With important commodities, there is no doubt that this can be a really significant handicap. The only remedy is similar to that already proposed for the handling of raw materials procurement; namely to make one materials manager responsible for all raw materials. Fortunately, the need for purchased materials of a given type is usually consistent with the stage-of-manufacture of the product (i.e. raw materials

in the early stages, then purchased components, then finishing and packaging materials) so, in many cases, the advantages of commodity specialization will not be lost by assigning materials responsibilty on a stage-of-manufacture basis.

No doubt the company that attempts to reorganize drastically its materials activities will experience many problems relating to the personalities of the people involved. In the new set-up, some people will inevitably be better off than before and others will think that they are not as well off. This is true of any major organization change, of course—and it can be a tough problem.

THE PLANT OF THE FUTURE

Despite the basic resistance to change in almost every organization, technological progress may eventually force a realignment of materials responsibilities. The materials management type of organization is better adapted to both office procedures that make use of electronic data processing and to the automated factories of the future.

With electronic data processing, it will become essential to think of materials management as an integrated activity for efficient programming. Maximum results will be obtained only when the entire materials cycle is programmed into the computer; the human decisions that guide the computer should be made rationally on the same basis. This is achieved best with the materials manager type of organization. The computer then becomes the materials manager's extra clerical force providing him with data at every stage of the materials cycle.

Automation is another reason why the need for the materials management type of organization will grow. In the automated plant, the distinction between materials management and manufacturing management becomes much sharper. Materials management becomes largely a matter of supplying raw material to batteries of self-regulating automatic equipment which transform it to finished products. Manufacturing becomes primarily devoted to servicing the equipment. To an increasing degree, its efforts become dedicated to the management of machines rather than the management of men.

Highly automated plants are years away in many industries, but almost every plant becomes a little more automated each year. The number of direct labor hours in the product declines, but depreciation expense increases with the increased capital investment needed for automation. The result is a cost structure that is more rigid. Downtime becomes more costly. But even the most advanced type of automated equipment must have raw material if it is to operate. As a result, it becomes more vital than before to have efficient material management to guarantee the flow of material to automated machines. This is best accomplished with the materials management type of organization. It is not insignificant that we find the closest approach to this type of organization in certain companies in the process industries. For it is in these industries that we find the closest approach yet to the plant of the future.

For further reading

NEW POTENTIALS OF MATERIALS HANDLING, by J. R. Bright, *Harvard Business Review* July-Aug. 1954.

COORDINATING PROCUREMENT—A CASE STUDY, by Howard T. Lewis, *Harvard Business Review*, Sept.-Oct. 1953.

TOPICAL

comments

LOOKING AHEAD

Tomorrow's office may sport some revolutionary features. Among predictions: letters will be dictated directly on stationery; files will be searched electronically and their contents displayed on desk or wall screens upon dialling the information needed; adding and calculating machines will be able to read a column of figures electronically. *(Management Tips.)*

Work rules changes may well be one of the hottest bargaining issues of the '60s. In the present impasse, labor is doggedly defending its right to maintain long-established work practices guaranteed to it by contract or custom. Management is just as persistently attempting to recapture or "buy back" prerogatives taken over by the unions.

To management, outdated work practices mean a blockage of their cost-cutting efforts, summoning up visions of paid hands who shouldn't be on the payroll or workers whiling away time they're getting paid for. To workers, concessions spell workers being forced out of jobs or long unemployment lines. *(Dun's Rev., Oct. 1960.)*

Trans-Atlantic flights at a cost of $31 apiece one way may be possible with the development of a new all-wing airliner now in the final stages on U.K. drawing boards. Low operating costs are the result of radical design changes in this 300-passenger airship which will cruise almost at the speed of sound. *(Fin. Post, Oct. 22/60.)*

The long-standing problem of coal production may be solved if the Rand *Report on Coal* is accepted by the Government. According to the new "Rand Formula", the present government subsidies on transportation, designed to make Atlantic and Western coal competitive with short-haul American coal in Ontario and Quebec markets, will be replaced over the next ten years by two other subsidies. One would be a "basic" subsidy on production; the other would be a "social" subsidy designed to promote alternative industries in the Atlantic Provinces. The production subsidy will then apply not only to coal shipped to distant markets but to that used for local consumption, thus making coal competitive with oil in local markets.

The recommendations, in effect, though discounting the prospects of coal as a basic energy source, are aimed at salvaging what is left of the coal industry and at developing diversified industry in the Atlantic Provinces. *(Can. Bus., Nov. 1960.)*

OF GENERAL INTEREST

The number of persons hired to do virtually the same job in industry varies widely among companies, a recent survey shows. The survey covered a cross-section of

industry represented by 88 major corporations having an annual sales volume of up to $1.4 billion and a total of more than one million employees.

Variations of 50% in manpower used to perform standard administrative tasks were common. In two industry groups, variations of 200 and 500% were discovered in general administrative work. One company found it had 700% more employees in personnel work, in proportion to the total work force, than another corporation in the same industry.

The following table, giving the high and low industry group figures compared with the average for all 88 companies, shows variations in the percent of total employees in major corporate functions: *(AMA News.)*

Function	*High*	*Low*	*Average**
Manufacturing or processing	71.5	45.0	59.68
Design, development research	26.6	3.9	14.71
Marketing	24.1	3.5	11.87
General Administration	14.0	8.7	10.58

*less than 100% total; minor subclassifications omitted.

Canadian travellers, for the ninth successive year, spent more in other countries last year than foreign travellers did in Canada. Canadian travel expenditure in other countries rose 10.3% in 1959 to an estimated $598 million, while foreign expenditures in Canada totalled $391 million, a rise of 12% over the preceding year. *(DBS, Nov. 4/60.)*

Corporation statistics for 1958 show that over the past 11 years only seven out of ten Canadian companies earned a profit. The volume of business in 1958 was in excess of $53 billion, of which 15.1% was conducted at a loss.

Net Profit, before taxes, has again declined in 1958 at 4.67%, as has Net Profit to Total Capital Employed at 4.34%. Sales to Total Capital Employed is again lower at .93 times. Sales to Fixed Capital, which stood at 3.50 in 1951, is now down to 2.55 times. Current Working Capital ratio is the same in 1958 as in 1957 at 1.43 compared to 1.99 ten years ago. In this connection also, Current Assets to Total Capital Employed stands at an all time low of 44.3%. *(C. B. Taylor & Associates digest of Can. Corporate Tax. Statistics.)*

ON THE PERSONAL SIDE

Offices can be too quiet. For best results, a worker should have a continuous background noise of at least five decibels (equal to the rustling of dry leaves). Otherwise, he hears only the creaks and groans of his own body. *(Ind. Psychology Newsletter.)*

How Effective are staff meetings? Less than a third of meetings studied by an engineering group achieved their announced objective. A third of meetings were being held too often or were not necessary at all, the engineers felt.

Some causes of the failures were listed as: tardiness, which accounted for a loss of more than 10% of total meeting time; lack of preparation by the chairman; and non-participation by about 15% of those attending. Other sources point out that, strange as it may seem, meetings scheduled off the hour, i.e., 10.04 instead of 10.00, encourage greater promptness. *(Bus. Week, Oct. 15/60.)*

Quick as a wink can now be defined as one-fifth of a second. That is the time it takes a person to blink, optical studies show, and the average person blinks 25 times a minute. *(Pacific Parader, Autumn 1960.)*

INCOME TAX AND ITS RELATIONSHIP TO MANAGEMENT*

By A. G. Burton,
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Management's silent partner in practically every business transaction today is taxation, with its multitudinous aspects and implications. After discussing the impact of high taxation on the individual and the economy, this paper proceeds to review some of the commonest tax situations affecting corporations. Giving the legal background, the author advises on the best way to meet specific tax problems of management.

UNTIL the last war commenced, income taxes were not particularly severe. Corporation rates had climbed gradually to around 15% with a small exemption before taxes. Personal taxes were so low that no one thought of withholding tax from salaries, for people could afford to pay their whole tax the following April. With the tremendous fiscal demands of war, both corporate and personal income taxes skyrocketed, thus leading to instalment payments of tax. After the war, some people had nostalgic ideas of a return to more reasonable rates but our politicians preferred to inaugurate baby bonuses, old age pensions, etc., which placed a drain on the treasury almost equal to the reduction in armament spending. Thus, today, we still have a 50% tax on corporate earnings and very high rates on personal earnings.

EFFECTS OF HIGH PERSONAL INCOME TAXES

Let us first consider a few results of the high rate of tax on personal incomes.

We are all well aware that we have been living in an era of inflation for the last 15 years. There are many roots to the growth of inflation but one of the strongest is the cost of labor. Any article that we buy has, as one of its component costs, labor. With the increase in tax rates and the resulting necessity to collect the tax at source, the cry was soon raised that take-home pay must be the same. If 10% were deducted to remit to the tax department, labor required a raise of, say, 11% to offset the deduction. This, of course, resulted in increased production costs, which in turn promoted price increases and then further wage increases. I am not saying that income tax alone has produced our inflation, but it undoubtedly has played a strong contributory role.

Again, the burden of income tax on personal incomes has forced all earners to look more and more for the so-called fringe benefits. Very few people today can save enough from their salaries, less tax, to maintain their relevant standard of

*An address delivered at a meeting of the Calgary Chapter of the Society, on March 24, 1960.

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living during their working lives and also provide for their retirement. The amount paid in taxes would previously have represented your savings. For instance, a man earning $12,000 a year will pay over $2,000 in tax. With a working span of say, 35 years, that represents $70,000 which invested at interest, would have provided him with almost $100,000 at retirement. This then has produced the pressure for pension, medical, and hospital plans. No longer can the average man provide for himself without assistance. All these benefits cost substantial sums of money. To the extent that businesses pay for these benefits, their costs go up, which puts more pressure on the inflation spiral. These expenses, by and large, are allowed as an expense to business for income tax purposes, which reduces the tax available and makes a higher rate of tax necessary to produce the same number of dollars. To the extent that governments pay for these benefits, such as in British Columbia and England, taxes must be imposed to make dollars available to pay for them.

The pressure of personal income taxes also makes people reach out for tax-free benefits such as payment of club dues, motor cars, stock options and so forth. Too often, we find businessmen using part of their energies to determine ways of obtaining tax-free benefits instead of devoting all their energies to their own particular jobs.

More examples can be provided, but let us now turn to tax matters affecting corporations.

THE WORDING OFTEN MAKES THE DIFFERENCE

At this point, I want to stress most strongly the necessity of each company having adequate tax advice, which can be from members of the corporate staff supplemented by outside tax lawyers and tax accountants. Moreover, tax is not just a matter of concern to treasurers, comptrollers or chief accountants. Every executive, senior or junior, should realize that every contract he enters into on behalf of his company can have potential tax problems. If handled and worded properly, these can have favorable tax consequences but, if handled or worded improperly, they can lead to unfavorable tax consequences. You would be surprised at the number of times a seemingly innocent transaction has led to tax troubles. Therefore, no matter what your sphere of operations within your company, if you run into anything outside the ordinary, discuss it with the company tax officer and give him a chance to look it over first. Nine times out of ten there may be no problem, but the tenth could cost your company unnecessary tax dollars.

Let me give you a few examples of this. In one instance, a warehouseman needed a certain amount of shelving to store various merchandise. He saw some used casing pipe lying in the yard, so he proceeded to build racks with it. It so happened that this casing had been imported from the United States duty-free for use in oil wells; the moment it was used for another purpose the company became liable to duty and sales tax even though it was used pipe. As a result, this man unwittingly subjected his company to unnecessary tax.

Again, a credit manager was having serious trouble collecting one of his accounts. In due course he accepted some shares in another company as payment for the account. A few years later he sold the shares for very little and thereupon, in that year, he wrote off his loss as a bad debt. The tax department and the courts both refused to allow this write-off as an expense. They said he had transferred an account receivable into an investment and the loss which he suffered was a loss on

investments, and therefore a non-deductible capital loss. If he had taken the stock merely as collateral security against his account receivable, then his loss would have been allowed taxwise.

A company, say in the logging business, finds it has a timber limit which it cannot use economically itself. A purchaser says he will buy the limit and pay $2.00 per M, such payment to be made each month as the timber is cut. Say there are ten million board feet, and therefore the total price of $20,000 appears acceptable under the circumstances. You, as your company's representative, believe that the purchaser will cut the limit in two years so you will get your $20,000 at the approximate rate of $10,000 a year. The limit only cost your company $5,000 in the first place so the deal sounds fine and you close it. Next thing you know the tax department says, "We want tax on this $20,000." The tax department is correct, because the Tax Act says if you receive amounts dependent upon use of, or production from, the property whether or not they are instalments of the sale price of the property (excepting agricultural lands), you must include those amounts in taxable income. Here again, tax can easily be avoided by using the right instead of the wrong words. If the purchaser agreed to pay you $10,000 per annum and not to cut more than five million feet per year, then you would have realized a non-taxable capital gain of $15,000 and saved some $7,500 in taxes. Here I am presuming that the company is not in the business of selling timber limits.

A company purchased some neighbouring land that had a rented house on it. As soon as the lease on the house expired, the tenant was asked to move, the building was razed and an extension of the plant was built on the property. The company continued to claim depreciation on the house, as is permitted with abandoned depreciable property or depreciable property sold at a loss. This was attacked by the tax department, and the courts ruled that the value of the house was part of the cost of the land. Therefore, since depreciation cannot be claimed on land, the company had no right to depreciation. We had a similar situation with one of our clients a few years ago, but we persuaded him to renew the rental of the house for another year. He did so and, as a result, has obtained his depreciation on the house, which cost $20,000, and thereby saved $10,000 in taxes.

These examples have been given to show that, often, very innocent-looking situations result in tax problems. The best way to look after tax problems is to handle your affairs properly at the beginning in order to prevent a problem from arising. Believe me, it is much easier to handle them at the outset than it is to argue them later when an assessment has been received.

Now let me discuss a few situations that should be watched taxwise, and which may be of interest to you.

TAX IMPLICATIONS OF BUYING AND SELLING PROPERTY

Whenever a business is bought or sold, be sure to have a tax adviser by your side. If you buy a building, you almost certainly buy the land it is on. Say you pay $200,000 for it and, as far as you are concerned, that is it. But not to the tax man. When we find this situation, we then have to try to allocate the $200,000 between the land and the building. Buildings can be depreciated for tax purposes, land cannot. We then must find some reasonable method of allocation, but still the allocation is arbitrary, and in the final analysis of the tax department may pin us down to a

larger percentage for land than we want. If, however, we get a bill of sale breaking down the cost of land and building, then the tax department must accept our figures unless they are completely unreasonable.

If you are selling depreciable property, you must always remember that any price you receive above your net book value (being original cost less depreciation) will be taxable in your hands as recaptured depreciation except to the extent that the sale price exceeds original cost. If you sell all the assets of one class that you own, the recaptured depreciation is all taxable immediately. However, you may, if you so elect, spread that excess back equally over the last five years, and many times this is an advantage. If you still have assets of that class left, then the recaptured depreciation serves to reduce the book cost of the remaining assets and will thereby reduce future annual depreciation claims. As a result, a price for your assets may appear attractive on the surface but be far less attractive when you realize that you must pay almost 50% tax on the excess of the price over your book value. The need for cash to pay this tax may also influence your thinking if you are giving some kind of terms of payment to the purchaser.

When purchasing another company, there are two basic routes which can be followed. One is to buy the shares of their company so that it becomes a wholly-owned subsidiary of your company, and the other is to acquire the assets and assume part, or all, of the liabilities of the selling company. There are entirely different tax implications depending on which route you follow.

BUYING THE SHARES OF A COMPANY

Under all normal circumstances, a dividend paid by one Canadian company to another Canadian company is tax-free in the hands of the recipient. This rule is in the Act in order to avoid taxing the same income three or more times, since corporate income is taxed first in the hands of the company which earned it, and secondly in the hands of the shareholders when they receive it as dividends. Without this rule, the same income would be subjected to additional taxes, which would of course be highly unfair. There is, however, one exception to this rule. If a corporation acquires more than 50% of another Canadian corporation, then the surplus of the acquired corporation at the end of its last preceding fiscal year is deemed to be designated surplus. To the extent that a dividend is paid out of that designated surplus, the controlling corporation must pay tax at regular rates. You are, however, permitted to pay out any earnings subsequent to the date of acquisition before you are deemed to be paying tax out of the designated surplus. This regulation may appear onerous but it was enacted in 1950 to close a serious loop-hole. For instance, if a man had built up a large surplus in his own corporation, he would be subject to tax when he received dividends paid out of that surplus. In order to avoid this tax, he could sell all his shares at a capital gain to another corporation. That corporation would immediately thereafter receive a substantial dividend, which it would have obtained tax-free, and thereby the government would receive no revenue from the accumulated surplus of the first corporation.

As a result of this, when you value a corporation for purpose of buying its shares, you must remember that a portion of the accumulated surplus will be dissipated to the tax department when it is paid out either in dividends or at the time of liquidation. For practical purposes, you will find in many instances that the

accumulated surplus at the time of purchase will never be paid out in dividends, since often that amount of money must remain within that corporation to provide working capital.

When you acquire all the shares of another corporation, only pieces of paper represented by share certificates change hands. The corporate structure of the company is in no way changed and, consequently, if there are any undisclosed liabilities, such as unassessed income taxes, lawsuits, etc., they will remain liabilities of that corporation. Adequate provisions should be made at the time of purchase of the shares so that you are covered by the vendor, should any such contingency occur.

BUYING THE ASSETS OF A COMPANY

If you buy the assets and assume some, or all, of the liabilities as opposed to acquiring the shares, then the corporate ownership is still in the hands of the original shareholders. Consequently, you need not be concerned about contingent liabilities as mentioned above, except of course in regard to any liens or encumbrances on the assets which can be cleared by your legal counsel. In this instance, however, you do leave the vendor corporation with a tax problem in regard to recaptured depreciation, which we have previously discussed. There are also one or two other points which should be watched carefully. The first is the question of accounts receivable and reserve for bad debts. Most companies find it necessary to carry some provisions for doubtful accounts and, if you are buying accounts receivable from another party, you will normally only pay what they are worth. You may take over all the accounts and also take over the reserve for bad debts. Under the Tax Act as it now stands, in this circumstance, the vendor will immediately find that his reserve for bad debts is added back to taxable income. On the other hand, if the purchaser finds that he can collect accounts which were reserved, he can add that reserve to his income and receive it as a capital gain. This matter can be arranged to work in reverse, providing the two parties get together and sign what is known as form T-2022. This form is an election in respect of the sale of debts receivable and, by signing the form jointly, you will agree as to who assumes the tax liability.

Similarly, when you purchase inventory of a business, if the price is in excess of the book value, that excess will be added back to the taxable income of the vendor. He can, however, elect to have one-third of the excess included in his income for each of the three taxation years, ending with the last taxation year in which he carried on the business. This election can only be made if he was carrying on the business for the three previous years.

INCOME TAX ON DIVIDENDS

For many years, this country was plagued by a very inconvenient situation whereby one man would build up a large surplus in his corporation and would, in effect, have practically all his net worth in that company. When he died, succession duties were levied on the value of the corporation, and the only way in which his estate could obtain the cash to pay the succession duties was to declare a dividend from the corporation. This, however, was immediately subjected to income tax, often at very high rates. After paying the income tax, sufficient cash would not be left over to pay his succession duties. The government set up commissions to investigate this situation in the late '30s, and early '40s, and, in the final analysis, there

is now a regulation in the income tax act to help alleviate this situation. The government, in effect, has said, "If you play fair with us we will play fair with you." For every dollar which you declare as dividends and the shareholders pay personal tax thereon, the company is permitted to segregate another dollar and pay a tax of 15% thereon. The 85 cents which is left becomes known as "tax-paid undistributed income." If the company is liquidated, the shareholders pay no further tax on this tax-paid undistributed income. If this is paid out in cash dividends, then the shareholders must pay personal tax. However, if a stock dividend is declared payable out of tax-paid undistributed income, that additional stock can be received tax-free by the shareholders. Usually, when doing this, we declare a stock dividend in non-cumulative, redeemable, preferred shares. By using this method we can subsequently redeem these shares, reduce capital, and thereby the cash is put in the hands of the shareholders tax-free.

TAXATION OF EMPLOYEE BENEFITS

Section 25 of the Income Tax Act is a rather all-inclusive section which states, in effect, that all payments made to an employee or officer of a company immediately prior to, during, or immediately after the payee was an officer or an employee of the payor, will be included in taxable income. This section was inserted in the Act in 1949 and has picked up a number of benefits which previously could have been given by corporations to their officers. However, in 1953, a section was added to the Income Tax Act covering shares sold by a corporation to its officers and employees, which has opened the door to giving officers and employees benefits which can be substantially tax-free. Let us say that the corporation stock is worth $20.00; the employee can be given the right to acquire a certain number of shares at a price of, say, $15.00, and he may be given an option whereby he can acquire these shares any time within a stated period of years, providing he is still an employee of the company. Without this section, the moment the employee obtained this option, and providing under the agreement he could exercise it immediately, he would then be subject to tax on $5.00 a share, being the difference between market value and option price. However, under Section 85(A), he will not be subjected to tax until he exercises the option. Let us say, by this time, that the shares are worth $25.00 a share. Therefore, on the day on which he buys any shares, he will be subject to tax on $10.00 times the number of shares. However, this section further states that the employee has an option to elect to include that amount in his taxable income that year and pay regular rates of tax, or to pay tax on a special basis. The special basis requires you to add his income for the three previous years, to add the tax paid during those three years, and thereby obtain a ratio of the average percentage of tax paid. This ratio is then applied against the benefit, but from that tax is deductible 20% of the total benefit. This means that a man who is married and has an income of $15,000 a year will find that his effective tax rate for the three years is very close to 20%. If it is only 20%, he will be tax-free upon making the election. If it is 22%, he will only pay 2% of the benefit in taxes. People who have been earning approximately $25,000 a year will find they have paid an average tax of about 33% and, therefore, they would pay approximately 13% of the benefit. As you can see, this results in a reasonably modest tax and can be of great benefit when compensating officers of a company.

TAXATION AND CORPORATE FINANCING

Now a brief word about corporate financing. When a company requires additional capital for its operations, it has two or three methods at its disposal. If the capital required is of a temporary nature only, it can possibly be raised by borrowing from the bank. If the capital required is of a more permanent nature, then it can be raised by issuing bonds and/or debentures which carry with them a rate of interest, or by issuing preferred or common stock, in which case dividends are paid on these securities. When the corporation pays interest on bonds or debentures, that interest is allowed as a corporate expense for tax purposes. However, dividends must be paid out of profits earned after provisions for income tax. In many instances, therefore, it is preferable to use the bond financing route.

Up until a few years ago, taxwise, there was relatively little difference to the investor whether he acquired interest income or dividend income. However, a few years ago, in order to assist in eliminating double taxation of corporate earnings, the government passed a regulation whereby dividends received by a Canadian resident from a Canadian corporation could be used to reduce income tax. This is done by deducting 20% of the dividends from your income tax. Note that this is not from taxable income but from the actual tax. As a result of this, there has been a trend for individuals to prefer dividends as opposed to interest.

Taxation has also tended to push investments into the common stock field as opposed to bonds and preferred dividends. Bonds are the safest securities because they usually have a first charge against the company's assets in case of bankruptcy. Preferred stocks carry a fixed annual dividend, which must be paid before dividends are paid on the common stock. Also, in case of liquidation, the preferred shareholders rank prior to common shareholders. As a result, the shareholders of common stock have the least security. On the other hand, with a successful corporation, they have the most to gain. On occasion, bonds and preferred stocks may be redeemed at a premium, but in normal cases it rarely exceeds 5%. On the other hand, a common stock that is worth $1.00 today may be worth $10.00 two or three years from now. In view of the very high incidence of personal income tax on the type of people who do have reasonable amounts of money to invest, we now find that people are not too interested in secured income because they find the tax department takes too large a bite out of it. Hence, in order to increase their personal fortunes, they are finding it necessary to invest in common stocks or, as they are commonly called, equity securities, in the hope of reaping a non-taxable capital gain. This is why nearly every day corporate financings come out in the form whereby debentures carry with them warrants and/or rights for the purchaser to acquire equitable securities. West Coast Transmission, Trans-Canada Pipe Lines, Canadian Oil Companies and many others are examples of this situation. This is one of the greatest impacts of income tax on business today.

For further reading

BUSINESS DECISIONS HAVING TAX IMPLICATIONS, by A. W. Gilmour, *Cost and Management,* May 1958.

TAXES ON INCOME AND THE UPWARD FORCE, by Harold E. Crate, *Cost and Management,* May 1959.

MEASURING MARKETING COSTS*

By M. P. McBain,
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Measuring marketing costs calls for a new and broader approach on the part of the accountant. If he is thoroughly familiar with marketing problems, the accountant can render invaluable informational services to the advertising department. This article reviews some of the major areas of cost that must be considered by the accountant in projecting and analysing marketing costs.

ACCOUNTING PEOPLE have done an outstanding job in providing helpful data to their respective manufacturing divisions for use in controlling operations, and have developed complex techniques and systems for this purpose. Any good factory accounting system is a combination of a number of these techniques skillfully blended by the accountant into a suitable system for his particular plant.

Marketing, however, is a continually changing activity in which each company is striving constantly for innovations in products or methods which will expose new customers to its line and continue to be at least one step ahead of its competitors. The marketing executive is, therefore, understandably loath to subject his operations to an excessively rigid system of control and the accountant, without the benefit of full and frank indoctrination from the marketing executives, is inclined to apply to his system design the same type of philosophy which has served so well for the factory.

It is usually one goal of any business to end a fiscal period, before payment of dividends, with more money in the bank than it had in the beginning. The financial man who is responsible for protection of that money and for recording its flow in and out of the bank has an unparalleled opportunity to observe the inter-departmental effects of decisions and activities undertaken by each of the separate divisions. Hence, if he is fully aware of the problems facing the marketing people and the factors which they like to consider in their decision-making process, he may be able to devise techniques for supplying them with prompt and accurate data which they had never dared even to wish for. In essence, this function would be not necessarily to participate directly in the actual decision but rather to assess on a comprehensive basis the ultimate effect on profits of the action proposed and, in some instances, to suggest for consideration possible alternatives to various details of the plan which might minimize costs.

PRINCIPLES FOR MEASURING MARKETING COSTS

As I have suggested, the measurement of marketing costs has not been reduced to firm techniques because of the element of constant innovation. However, there are some guiding principles which can be used to good advantage in any plan for measurement.

*An address given at the Marketing Conference of the Canadian Manufacturers' Association's Annual General Meeting held in Toronto on June 7, 1960.

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First—no measurement of cost is of value unless it is related to the results of the measured activity. For example, analysis of advertising costs by geographical area, or direct selling expense by type or class of customer, would be pointless unless we have an accurate break-down of sales into these same groupings. And I submit that it is equally important to determine just how much profit these particular groups of sales are contributing, for one group of outlets may produce more dollars of sales per dollar of marketing expenditure but provide no profit to deposit in the bank.

This problem of profit contribution is related not only to the results of the conventional distribution of costs when produced on present equipment, but also the consequences of expansion of a given line of product beyond the present capacity.

Second—there are often long-term costs resulting from a decision which far outweigh the immediate economies. These long-term effects can usually be measured best by the marketing or top management group since they involve sociological considerations or the values of public relations and customer good will. Also, in this category, we might deal with the function of advertising and promotional programs in providing steady employment and full utilization of plant during what would otherwise be periods of seasonal inactivity.

Third—enthusiasm for a cost-saving idea should not prevent us from viewing all aspects of the change throughout our business or even in the same department. The old admonition about being penny-wise and pound-foolish is still valid in any cost-saving plan. Sometimes we have to devote ourselves less to saving money than to spending it wisely. This is particularly true in marketing, where delay permitted in the interest of extreme caution may nullify the effectiveness of an expenditure when it is ultimately made.

Fourth—we should be sure to measure the cost of measuring our marketing costs. Too many of us spend labor, equipment time, and stationery to produce, at regular and frequent intervals, beautiful volumes of figures which, because of government regulations, unchangeable company policy, or other reasons, cannot possibly give rise to a management decision. Or perhaps only one percent of the contents can serve such a purpose. Why not, then, be completely factual about the need for facts and, as management people, obtain on a regular and frequent basis only what you want to use. This will save you much time and confusion and you may find that the streamlined figures can be produced much more promptly and cheaply as a by-product of your required daily accounting operations. In many instances the special routines and equipment are required only to produce that part of a report which is really never used. The wisdom of the unchangeable company policy, or a decision to strive for changes in government regulations, can be checked by an occasional special study.

ADVERTISING EFFORT VARIES WITH INDUSTRY

So much for underlying principles motivating measurement methods. Now a few thoughts about the shape of the yardsticks:

It is not possible to set an arbitrary level of advertising and promotional expenditures which will be appropriate for all kinds of industries. This level will vary greatly between products and even with changes in conditions for the same product.

For example, the producer of machinery for manufacturing shoes will have to advertise only in a few trade and business publications in order to reach all of his

potential customers. Furthermore, his customers are not numerous, so that his salesmen can do most of his selling by means of personal contact with the consumer.

The manufacturer of ladies' cosmetics will be able to limit his advertising to those media which reach women, with an occasional appeal to the man who either wants to gain favor with the good wife, or perhaps employ a surreptitious method of encouraging her to regain her lost youthful appearance.

The average individual does not purchase an automobile more frequently than once per year and it would seem that the manufacturer's problem is to be sure that his message reaches each automobile user at the critical time when he is about to consider a purchase or, at least, is in a position to make such a purchase. And he does not number children among his consumers.

I hope the manufacturers in the categories I have listed will forgive me for using as a basis of this illustration what I am sure they will consider an extreme oversimplification of their marketing problems.

On the other hand, packaged grocery staples such as ready-to-eat cereals are used by all members of the family from two to 92 years of age, and by families in every economic or social level. Consequently, our message must reach all classes and ages, for Mrs. Housewife will not buy a replacement package unless the first is being used. Since these products are purchased, not annually, but at least weekly, we have to provide a reminder for her to pick up an adequate supply every time she shops. If she fails to do so, another family will run out and be forced to substitute some other form of food.

THE SHIFT FROM INDIRECT TO DIRECT PROMOTION

I can remember when we purchased our groceries over the counter and the better grocers trained their clerks to remind the customer of the staple items she might have forgotten and also any specials the store was featuring. The customers seemed to appreciate this interest and the progressive grocers who employed such techniques grew and prospered. In those days considerable effective selling effort could be directed to informing these grocers, and their clerks, of the features of our products, and providing them with aids to display the goods to advantage. With the advent of the huge self-service super-market, this personal service has disappeared and the grocers' mark-up has been reduced accordingly. But the housewife is now faced with long shelves laden with a bewildering multiplicity of products and brands. To stop and read the list of ingredients and other features on each label would make the weekly shopping trip an extremely arduous task and result in hopeless congestion in the stores. Therefore, our advertising must pre-inform the consumer and remind her to include our cereals on her list before she reaches the store. In other words, advertising has been required to assume some of the functions and some of the costs previously accounted for by the grocery clerk.

The decision as to what kinds and combinations of advertising are appropriate, and how much will produce the desired results, is one which can be made best by the specialists in this field, either in the industry or in a professional agency. However, there are numerous other factors which must be considered.

OTHER FACTORS IN ADVERTISING

Seasonal fluctuations can be very costly for the factory, and advertising which

minimizes low-volume periods may pay for itself many times in plant cost savings in addition to the normal rate of profit on the additional sales. And the employees are spared the hardship of periodic lay-off. Levelling out of sales also helps to reduce warehouse costs and handling as well as interest expense on the investment in inventories. The extent to which you can afford to appropriate funds for such a purpose must usually be computed by the accountants from time to time as conditions change. Actually, accountants and engineers have done considerable effective work in devising break-even charts which are particularly useful when seeking additional volume on a bid basis. However, in many industries these charts require so much special interpretation in order to apply them to varying conditions of product mix, etc., that they may tend to lead to decisions which are not based on all of the pertinent facts.

Advertising may be used more extensively to increase volume for utilizing fully existing plant facilities than might be the case if increased volume would require heavy investment in new facilities. If you have relatively large amounts of by-product, expansion of the market for the primary product beyond the capacity to dispose of the resultant by-product at acceptable prices will reduce the unit profit contribution of the added volume to the point where it may not be sufficient to pay for the extra advertising.

SOME ELEMENTS OF MARKETING COSTS

An advertising and promotion program is usually very complex and involves constant innovation to meet changing conditions. It is very simple to make advance computations of the direct costs but all plans must be kept under constant surveillance to avoid unanticipated indirect costs. These can be in the form of more numerous short production runs in the plant, with costly change-overs, which may not be charged against the advertising appropriation but do affect the profit deposited in the bank account. Or it may involve increased obsolescence, or added warehousing or shipping costs to achieve co-ordination of deliveries with advertising schedules. Then there is the very real danger that a new promotional plan may require the addition of a few office clerks or equipment. All of these expenditures may be well worth-while but should be included in the advance appraisal of the plan before the decision is made.

Salesmen's salaries, commissions, and expenses are fairly easy to record and can be broken down in numerous ways. If anyone has found a fool-proof system for insuring that no salesman will ever make an error in his favor when reporting his expenses, however, I will be interested in some free advice.

When warehousing and repair or installation services are provided at points across the country, separate accounting is useful to determine whether each point is paying its way.

Freight costs are a very important item for many manufacturers and it is surprising to learn how many companies which ship large quantities of merchandise, both inbound raw materials and finished product, do not have genuine traffic departments staffed with qualified personnel. Our own traffic department is a highly profitable operation both to us and to our traffic staff. As a matter of fact, there are organizations which will contract to review the freight payments of shippers on the safe assumption that the saving they can make in rate corrections will provide adequate remuneration to them on a percentage basis.

The traffic manager can not only negotiate for better rates but can also determine the routing which will result in the minimum freight cost commensurate with adequate service. He may also be able to point up more economical types of crating which will still comply with the carriers' requirements. Or he can advise on the combinations, etc., which will provide the best-size shipments to avoid extra minimum weight charges or other penalties.

Rigidly controlled pre-planned salesmen's routes may reduce travelling time and expense and provide adequate coverage of each territory but it may be wise to discuss this problem with the traffic manager. While the customer will decide when to make his purchase, many will tend to fall into a pattern which coincides with the salesman's regular visits. If these salesmen's visits are timed to facilitate a semi-simultaneous flow of orders from a given area which permits pooling of shipments to the best possible advantage, the customer is likely to obtain better service while freight costs are reduced more than the saving which could be realized from a different salesman's route.

Marketing activities need to be co-ordinated with the manufacturing department so that unusual volume demands will not be frustrated through shortages of materials, labor, or equipment. If Canadian supplies of certain materials are limited, unusual demands may be impossible to fill within the time allowed, whereupon the excess may have to come from foreign sources and involve extra duty and transportation costs. There are numerous variations of this element of cost which can result from marketing decisions but can be avoided by proper co-ordination well in advance. Once such co-ordination is operating effectively, plant inventories can be reduced to eliminate the portion held as insurance against unexpected orders, and the treasurer can reduce his borrowing or place some short-term funds on loan at worth-while interest rates.

Periodic review of automobile operations is worth-while. Expenses of a company fleet may be well controlled and yet be higher than the cost of renting the entire fleet from one of the leasing agencies. This will depend somewhat on the mileage driven and the financial position of the company, but a leasing plan may be somewhat more difficult to implement when it would involve disposing of a large number of automobiles.

Many credit managers consider their policy has reached the ultimate in success if losses have been reduced to a very low level. This can always be assured by eliminating all sales except on C.O.D. basis but such a policy might soon result in loss of all sales.

The sales department can usually estimate fairly accurately what volume of new business would be forthcoming from the new customers who would become eligible for credit under a more lenient policy. The probable loss and the maximum loss, which might result from sales to these firms can also be forecast and compared against the gross profit obtainable from this new volume. This may be the least expensive way to obtain new business.

Corporation taxes vary in impact in some of the provinces because of the methods of allocating income, differences in allowable expenses, or higher rates. Taxes are exigible if the corporation has a permanent establishment in the province and there are many types of innocent-appearing marketing activities which fall within this

definition. Any planned change in assets or location of representatives between provinces would seem to merit a discussion with the company's tax staff.

CONCLUSION

This has been only a partial list of marketing costs but it would be improper to complete a discussion of the measurement of marketing costs or, indeed, of any other expenditure without mentioning one other measurement which cannot be made from your ledgers. Every activity must be carefully weighed to determine whether, in the long run, it is ethical and in the best interest of our consumers, our customers, and our employees. If it fails to meet this test, no matter how small the expenditure, it will prove eventually to have been too costly.

For further reading

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